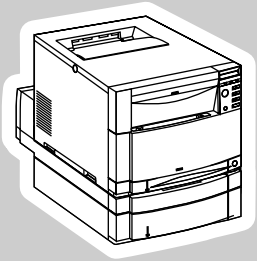

hp color LaserJet 4550/4500 series

invent

quick reference service guide

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HP Color LaserJet 4550/4500 Quick Reference Service Guide

Volume I
November 2000 Edition

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Ordering other manuals

This *HP Color LaserJet Family Quick Reference Service Guide* has been created to help the HP LaserJet service engineer quickly troubleshoot common printer problems. While this reference is intended to provide information the service engineer will need for on-site repair of HP LaserJet color products, it is not intended to replace the service manual for any HP LaserJet color product. For detailed information about the HP LaserJet color products described in this guide, see the user guide or service manual for that product.

Service manuals for HP LaserJet products are available from Hewlett-Packard. The phone number for the Service Parts Order Desk is:

(800) 227-8164 (U.S. only)

If you are located outside of the U.S., contact your local HP Sales and Service Office. See “Services and support resources” on page 197.

Supported products

Name used in this guide	Model number	Maximum pages per month	Service manual part number
HP Color LaserJet 4500 4500 N 4500 DN	C4084A C4089A C4094A	35 K	C7085-90921
HP Color LaserJet 4550 4550N 4550DN 4550HDN	C7085A C7086A C7087A C7088A	35 K	C7085-90921

Note

This guide will be updated as the service needs change, as new products are introduced, or as information becomes available.

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1 Troubleshooting control panel messages

Overview

This chapter provides a list of control panel messages for the HP Color LaserJet printers. Alphabetical messages are listed first, followed by numerical messages. Control panel messages that are self-explanatory are not included. See the service manual for more detailed information.

Following the control panel messages are suggestions for troubleshooting paper path problems.

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Pre-troubleshooting checklist

WARNING!

Always turn off, then unplug, the printer before servicing. Current is present in the DC power supply whenever the printer is plugged in.

Note

The customer is responsible for ensuring that the maintenance units are in good condition.

Before troubleshooting any specific printer problem, check the following:

- Has the printer been maintained on a regular basis?
- Are all of the maintenance units within their rated life?
- Is the customer using media as specified in Chapter 5, “Media specifications” and the *HP LaserJet Family Print Media Guide*?
- Is the media stored correctly and within environmental limits?
- Is the printer installed on a solid, level surface?
- Has the line voltage been checked to make sure that it does not vary more than 20 percent from the nominal rated value specified on the power-rating label?
  - Large motors used near the printer can cause temporary voltage changes.
- Is the operating environment within the parameters listed in the printer service manual?
- Is the printer protected from substances such as office cleaning materials and the ammonia gas that is produced by diazo copiers?
- Is the printer protected from direct sunlight?
- Have all non-HP components (toner, typeface DIMMs, memory boards, and EIO cards) been removed from the printer?

CAUTION

Hewlett-Packard recommends the use of HP products in this printer. Use of non-HP products can cause problems that require service not covered by the Hewlett-Packard warranty or service agreements.

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- Has the printer hardware or software configuration changed? Or could the problem be associated with any specific software?
  - Contact the Customer Care Center for software-related problems (see Chapter 11, “Services and support resources”).
- Could the problem be related to network configuration changes?
  - Remove the printer from the network and make sure that the failure is associated with the printer before beginning troubleshooting.

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Control panel messages

Alphabetical messages

ACCESS DENIED MENUS LOCKED

Appears for approximately 5 seconds when a user has attempted to select a menu value while the printer control panel locking is enabled.

- See the system administrator for access to the printer control panel.

BAD DUPLEXER CONNECTION

The duplex unit is not correctly installed.

1. Verify that the power cord is connected to the duplex printing accessory and the short power cord from the duplex printing accessroy is connected to the printer.
2. Turn printer off and then on.
3. If the error continues, verify that the duplex unit is correctly installed.

If error persists, replace duplex unit.

CALIBRATION EXECUTING

The printer is executing an internal color calibration. This process should take approximately 90 seconds.

- No action is required.

CANCELING JOB

The printer is canceling the current print job. Incoming data for the current job will be discarded.
No action is required.

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CANNOT DUPLEX CLOSE REAR BIN

The printer cannot duplex because the rear output bin is open.

1. Close the rear output bin door.
2. If the error message does not clear, turn the printer off and then on.

CANNOT DUPLEX CHECK REAR BIN

alternates with

CANNOT DUPLEX CHECK PAPER

The printer cannot duplex because the rear output bin is open or the media is not supported by the duplex unit.

1. Close the rear output bin.
2. If the error message does not clear, turn the printer off and then on.

Verify that the media is supported by the duplex unit. See “Supported media weights and sizes” in Chapter 5.

CHECKING PRINTER

The printer is performing an internal test. This process should take approximately 30 seconds. The message appears during the initiation of the engine test. When finished, the printer goes online.

- When the test has finished press Go to return the printer to the READY state.

CLEARING PAPER FROM PRINTER

The printer has jammed or was turned on and media was detected in the paper path. The printer is attempting to clear these pages.

- No action is required.

CLOSE FRONT DUPLEX DRAWER

The duplex drawer is not completely closed.

- Close the duplex drawer.

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CLOSE MIDDLE FRONT DRAWER

The drawer that holds the intermediate transfer belt is open. This drawer is called the ITB drawer, but is referred to as the middle front drawer for end users. Switch SW1 indicates the drawer is open. When the drawer is closed, a plastic protrusion on the lower left corner of the drawer pivots an arm allowing SW1 to toggle to the open position.

1. Close the ITB drawer.
2. If the message persists, remove the printer's left-side cover and inspect the mechanical linkage that closes SW1.
3. Refer to the wiring diagram to verify the wiring; the two-wire connector should be firmly seated to SW1 and the wiring harness should be firmly seated to connector J1003 of the DC controller PCB.
4. If the message persists, use an ohmmeter to verify functionality of SW1.

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CLOSE UPPER REAR DRAWER

Switch SW5 monitors the closing of the printer's upper rear door (this door allows you to access the fusing assembly). When the fusing door is closed, a tab on the rear door pushes a door switch actuator that runs along the left-side of the printer and closes SW5.

1. Close the upper rear drawer.
2. If the message persists, remove the printer's left-side cover and inspect the mechanical linkage of SW5 and the lever.
3. Refer to the wiring diagram and verify all connections (J103 of the DC controller PCB and to SW5). Verify they are firmly seated.

Verify that both the drum and ITB drawers are firmly closed; closing these drawers also closes SW4.

Note

Closing the rear door, the drum drawer, and the ITB drawers closes SW4 and SW5. When either of these switches is open, the +24 V supply is disabled. This safety feature protects the operator from any high voltages.

CLOSE TOP COVER

SW2 indicates whether the printer's toner access cover is closed. When the toner access cover is closed, a lever is pushed down. This in turn rotates a pivot forward, opening the top cover switch (SW2).

1. Close the top cover.
2. If the message persists, remove the printer's top assembly cover and verify all mechanical linkages associated with SW2.
3. Verify that the connector on J1003 of the DC controller PCB is firmly seated.

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CLOSE UPPER FRONT DRAWER

The drawer that holds the imaging drum (the drum drawer) is open. Switch SW3 indicates that the drawer is open. When the drawer is closed, a plastic protrusion on the lower left corner of the drawer pivots an arm that allows SW3 to toggle to the open position.

1. Open the drawer and firmly push the drawer closed using one hand in the middle of the drawer.
2. If the message persists, remove the printer's left-side cover and inspect the mechanical linkage that closes SW3.
3. Refer to the wiring diagram and verify the wiring. The two-wire connector should be firmly seated to SW3 and the wiring harness should be firmly seated to connector J1003 of the DC controller PCB.
4. If the message persists, use an ohmmeter to verify functionality of SW3.
5. Verify FM3 (in the front of the Imaging drum drawer) is functioning properly. The fan con-nects via J77 to J1022 on the DC Controller.

Note

Closing the drawer also closes SW4 (the drum drawer switch). When SW4 is open, the +24 V supply is disabled. This safety feature protects the operator from any high voltages when the drum or ITB drawers are open.

COLD RESET (4500)

-or-

RESTORE FACTORY SETTINGS (4550)

The cold reset power-up sequence has been entered.

- Most printer variables will reset to their factory default values.

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CONTINUOUS PAGE PRESS CANCEL JOB (4500)

The printer configuration page is being printed continuously.

- Press [Cancel Job] to terminate continuous configuration page printing and return the printer to the READY state.

Note

The HP LaserJet 4550 Paper Path test runs from the Information Menu.

DATA RECEIVED

The printer has received and processed data and is waiting for a form feed.

- Press [Cancel Job] and resend the last page of the job making sure a form feed is sent with it, or press Go to feed a new sheet of media through the printer.

DENSITY SENSOR OUT OF RANGE
alternates with
CLEAN DENSITY SENSOR

A density sensor out of range error was detected during a color calibration.

- The density sensor might be dirty. Inspect and clean the sensor.

DIAGNOSTICS MODE

The extended diagnostics power-up key sequence has been entered. Refer to the diagnostics procedures at the end of this chapter.

- No action is required.

DRUM ERROR REPLACE DRUM KIT

An error has been detected with a component of the printer drum kit.

- Replace the drum kit.

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DRUM LIFE LOW REPLACE DRUM KIT (4500)
-or-
DRUM LIFE LOW ORDER DRUM KIT (4550)

Approximately 80 percent of the drum's life has been consumed.

- Continue printing and order the drum kit. Drum replacement will be required in the near future.

DRUM LIFE OUT REPLACE DRUM KIT

The imaging drum has reached the end of its expected life.

- Replace the drum kit.

DUPLEXER ERROR CHECK DUPLEXER

An error has occurred in the duplex unit.

1. Verify that the duplex unit is correctly installed.
2. Verify that the small power cord from the duplex unit is plugged into the printer, and the power cord from the AC outlet is plugged into the duplex unit.

EIO X INITIALIZING YYY
alternates with
DO NOT POWER OFF

The EIO device in slot X is initializing. The YYY value will increment every 10 seconds during this process.

- No action is required.

EIO X NOT FUNCTIONAL

The EIO slot specified does not have a card installed or is not functional.

- No action is required.

EVENT LOG EMPTY

SHOW EVENT LOG was selected from the Information Menu, but the Event Log has no entries.

- No action is required.

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FUSER LIFE LOW REPLACE KIT (4500)
-or-
FUSER LIFE LOW ORDER KIT (4550)

Approximately 95 percent of the fuser's life has been consumed.

- Continue printing, or replace the fuser kit. Fuser replacement will be required in the near future.

FUSER LIFE OUT REPLACE KIT

The fuser has reached the end of its expected life.

- Replace the fuser kit.

INITIALIZING

The message appears when the printer is initially turned on.

- No action is required.

INSTALL DRUM KIT

The drum kit is not installed or is incorrectly installed.

- Verify that the drum kit is correctly installed.

INSTALL TRAY 2

The printer cannot print until media is loaded into Tray 2. The paper path for Tray 3 passes through Tray 2.

- Insert Tray 2 into the printer so that printing from Tray 3 can continue or start.

MEMORY FULL STORED DATA LOST

The printer has no available memory. The current job might not print correctly. Some downloaded fonts might have been deleted.

- Try printing simplified pages. If this does not resolve the problem, add printer memory.

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MEMORY SETTINGS CHANGED

The I/O buffering settings were changed by the printer because there is not enough memory available to use the previous settings.

- No action required. However, adding printer memory might prevent this from occurring.

MEMORY SHORTAGE JOB CLEARED

The available memory was not enough to continue printing. The remainder of the job was canceled.

- No action required. However, adding printer memory might prevent this from occurring.

MEMORY SHORTAGE PAGE SIMPLIFIED

The printer's adaptive data compression had to resort to lossy compression to fit raster graphics in the available memory. This has caused a data loss in the raster output.

1. Reduce the complexity of the page to improve the print quality.
2. Adding memory will not correct this problem.

NO JOB TO CANCEL

[Cancel Job] was pressed but there is no active job or buffered data to cancel. The printer automatically returns to the READY state.

- No action is required.

OFFLINE

The printer is offline and there are no error messages pending.

- Press [Go] to return the printer to the READY state.

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PAGE CANNOT PRINT NOW
alternates with
RETRY WHEN PRINTING STOPS

An internal page has been requested while the printer is printing an incoming job. Interrupting the job to print the internal page would corrupt the job's environment and potentially cause the job to finish printing incorrectly after the internal page is completed. Consequently, internal pages are not permitted to interrupt jobs and can only be printed when the printer is idle.

- Retry the print job after the printer has completed the current job.

PLEASE WAIT

The printer is in the process of purging data so that it can go offline or into the menus.

- No action is required.

POWERSAVE ON

The printer is in PowerSave mode. This message is cleared by pressing any key or by the receipt of a print job.

PRESS GO TO PRINT
alternates with
PRESS SELECT TO CHANGE TONER

The top cover was opened and closed when the printer was not in toner cartridge replacement mode.

- Press [Go] to resume printing or press [Select] to enter the toner replacement mode.

PRINTER LANGUAGE NOT AVAILABLE

The printer received a request for a new language (personality) that does not exist in the printer.

- No action is required.

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PRINTING CALIBRATION PAGE

The color calibration page is being printed. The printer returns to the READY stage upon completion of this page.

- No action is required.

PRINTING CONFIGURATION PAGE

The configuration page is being printed. The printer returns to the READY stage upon completion of this page.

- No action is required.

PRINTING FONT LIST

A typeface list for the available personalities is being printed. The printer returns to the READY stage upon completion of these pages.

- No action is required.

PRINTING MENU MAP

The printer menu map is being printed. The printer returns to the READY state upon completion of this page.

- No action is required.

PRINTING REGISTRATION PG

The registration page is being printed. The printer returns to the READY state upon completion of this page.

- No action is required.

PRINTING LASERJET DEMO (4500) -or- PRINTING DEMONSTRATION (4550)

The demo page is being printed. The printer returns to the READY state upon completion of this page.

- No action is required.

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PRINTING LASERJET DEMO 2 (4500 only)

The demo page is being printed. The printer returns to the READY state upon completion of this page.

- No action is required.

PRINTING ACCESSORIES

The accessories page is being printed. The printer returns to the READY state upon completion of this page.

- No action is required.

PRINTING COLOR GUIDE

The color guide page is being printed. The printer returns to the READY state upon completion of this page.

- No action is required.

PROCESSING JOB

The printer is processing the current job.

- No action is required.

READY

The printer is online and ready to receive data, and no status or device attendance messages are pending.

- No action is required.

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REINSTALL TRANSFER BELT

This message occurs if you do not have the intermediate transfer belt installed in the printer or if the home position marks (on the ITB) are not detected by sensor PS5. The ITB must be rotating before PS5 is able to detect its “home positioning” marks. Both the ITB and the imaging drum are driven by the drum motor (M4).

1. Check SW1 for correct operation and make sure the cables are connected.
2. Verify that the ITB is installed in the printer.
3. If the ITB is installed and seated properly, verify that PS5 is not damaged. PS5 is located on the ITB assembly. If the sensor appears damaged replace the entire ITB assembly.
4. Clean PS5.
5. Verify all wiring within the ITB drawer. Note the connection on the ITB assembly (located on the front, lower, left-hand corner of the assembly). When the drawer is closed, the connector “mates” with a receptacle connector on the drawer. Verify the connector and all wiring are in good condition. Make sure there is no paper in the connector at the base of the drawer.
6. Verify that the drum motor (M4) is rotating both the imaging drum and the ITB. Run the drum test from diagnostic mode to verify drive spindle movement for both the imaging drum and ITB.
7. If the imaging drum is not rotating, verify the imaging drum connector is firmly seated into the connector J204 of the developing PCB.

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REMOVE PAPER TOP OUTPUT BIN

The top output bin holds 250 sheets of paper. Sensor PS9 along with its sensor flag detects the height of the output paper stack. Perform the action items if this message appears with no paper in the output bin.

1. Verify that the PS9 sensor flag and arm move freely and its movement is not blocked.
2. Verify PS9 is free of dust and debris (top assembly cover must be removed to access sensor).
3. Verify all connectors are firmly seated. Refer to the wiring diagram.

Note

PS9 (a three-wire sensor) plugs into a through-wall connector on the printer's chassis and then into a 14-pin wire harness, which plugs into J206 on the developing PCB. All signals from the developing PCB are routed to J201 on the developing PCB to J1017 on the DC controller PCB.

RESETTING MEMORY

The printer is executing a memory reset. The printer returns to the READY state upon completion of this process.

RESETTING VALUES FINISHED

The color calibration density values have been reset to their default values.

RESTORING FACTORY SETTINGS

The printer is executing a RESTORE FACTORY SETTINGS or a COLD RESET.
No action is required.

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SELECT LANGUAGE

The language selection power-up key sequence has been entered. The printer will prompt the user to select a new control panel display language once it has completed its initialization process.

- Select a new language when prompted.

SERVICE MODE

The Service Mode power-up key sequence has been entered. The printer will remain in Service Mode until [Go] is pressed.

- Press [Go] to end service mode.

TONER CMYK LOW

The toner cartridge specified is low on toner. This message appears if TONER=LOW (default) is set on the printer control panel in the Configuration Menu.

- Printing will continue until a TONER OUT message appears. To change the toner cartridge now, press [Select].

TONER CMYK OUT
alternates with
PRESS SELECT TO CHANGE TONER

The toner cartridge specified is out of toner.

- Press [Select] to enter the toner replacement mode. Press [Go] to resume printing without changing the cartridge.

TONER CMYK LOW
alternates with
PRESS SELECT TO CHANGE TONER

The toner cartridge specified is low on toner and must be replaced. This message appears when TONER LOW = STOP is set on the front panel in the Configuration Menu.

- Press [Select] to enter the toner replacement menu.

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TONER POSITION [COLOR] = [STATE]

Indicates the current state of a particular toner cartridge. This message appears when [Select] is pressed while a TONER LOW/OUT message appears.

- If necessary, replace the specified toner cartridge.

TRANSFER KIT LOW REPLACE KIT (4500)
-or-
TRANSFER KIT LOW ORDER KIT (4550)

The transfer kit is near the end of its expected life.

- Although printing can continue, the transfer kit should be replaced for optimum printer operation.

TRANSFER KIT OUT
REPLACE KIT

The transfer kit has reached the end of its expected life.

- Replace the transfer kit.

TRAY X EMPTY [TYPE] [SIZE]

The specified tray is empty but the current job does not require this tray to complete the job.

- No action required. However, loading the proper media type and size into the tray will avoid this message in the future.

TRAY X LOAD [TYPE] [SIZE]

The specified media type and size need to be loaded into the requested tray.

- Load the specified media type and size into the requested tray. Press [Go] to override this request and cause the page to be printed on different media.

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TRAY X SIZE [SIZE]

Media has been loaded into the specified tray. The most recently configured size will be displayed with an asterisk next to it.
Action:

1. [– Value +] might be used to view all possible media sizes.
2. Pressing [Select] will select the currently displayed size. Pressing [Go] will remove the message.

TRAY X TYPE [TYPE]

Media has been loaded into the specified tray. The most recently configured type will be displayed with an asterisk next to it.

1. [– Value +] might be used to view all possible media types.
2. Pressing [Select] will select the currently displayed type. Pressing [Go] will remove the message.

TRAY X OPEN

The specified tray is not completely closed.

- Close the specified tray.

WARMING UP

The fuser is warming up. Printing will continue when the fuser reaches the optimum temperature.

- No action is required.

WASTE TONER FULL
REPLACE DRUM KIT

The waste toner full sensor PS13 detects a waste toner full condition. A light receiver and light pipe arrangement, along with a window in the drum assembly, look for a waste fill condition. Verify that sensors and light pipes are not blocked.

1 Replace the drum kit.

2 Check the sensor, replace it if it's defective.

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13.XX Jam

Note

Refer to the jam troubleshooting section for the complete details about locating jams.

XX 4500	4550	Description:
0	1	Jam in input feed area
1	5	Jam in fusing area
2	6	Jam in fusing area
3	10	Jam in duplex reversing unit
4	11	Jam in duplex feed unit
5	12	Jam in duplex paper feed area or ITB drawer
6	13	Jam in duplex paper feed area or ITB drawer
7	20	Jam in paper feed area or ITB drawer
8	21	Door open jam
9	23	Irregular jam in paper path
10	24	Paper in the paper path is too short
11	25	Paper in the paper path is too long
12	2	Paper did not clear input sensor in time.

Note the location of the leading edge of the first jammed piece of media.
Note the jam message.
Note the location of the media.

13.XX Jam
alternates with
CHECK ALL REAR DOORS

Media is jammed in the rear paper path or rear duplexing area.

1 Open the rear duplex door (if installed) and remove any jammed media.

2 Open the upper rear door and remove any jammed media.

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13.XX Jam
alternates with
CHECK MIDDLE FRONT DOORS

Media is jammed in the transfer belt area or media is not picking.

1 Open the ITB drawer and remove any jammed media.

2 Check for media between the transfer roller and the fusing assembly.

13.XX Jam
alternates with
CHECK FRONT DUPLEX DRAWER

Media is jammed in the front duplexing area.

- Open the duplex drawer and remove any jammed media.

13.0 Jams (4500)
13.1 Jams (4550)

1 Check to see if the white plastic tabs (located inside the front of the trays under the separation tabs) have fallen off in Tray 2 or Tray 3. (Note the position of the springs.)

2 Make sure that the correct media is loaded properly in Tray 3, and that it is not overloaded.

3 Make sure that the two shipping locks have been removed from the back of Tray 3.

4 Inspect the pick-up rollers for Tray 2; the flat side of the “D” on the rollers should be parallel to the paper.

5 Make sure that the roller spring underneath the front of Tray 2 is secure.

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13.1 Jam OPEN MIDDLE FRONT DRAWER (4500)
13.5 Jam OPEN MIDDLE FRONT DRAWER (4550)
alternates with
CHECK IN REAR OF DRAWER

A jam has occurred inside the ITB drawer area. (The ITB drawer is also referred to as the middle front drawer for end users.) The jam might be located in the fuser area or between the transfer area and the fuser.

1 Open the ITB drawer and carefully inspect for any media.

2 Be sure to inspect the fusing area. You might need to access the fusing area through the rear door.

3 Remove any jammed media.

Make sure that the transfer roller is securely in place

20 INSUFFICIENT MEMORY
alternates with
PRESS GO TO CONTINUE

More data has been received from the computer than fits in the printer's internal memory.

1 To continue printing, press [Go]. Only the amount of data that fits in the printer's internal memory is printed.

2 To cancel the job, press [Cancel Job].

3 Add more memory to resolve the problem.

22 EIO X BUFFER OVERFLOW
lternates with
PRESS GO TO CONTINUE

The EIO buffer for the EIO card in slot "X" has overflowed during a busy state.

1 The current data in the print buffer will be lost.

2 Press [Go] to resume printing and then resend the job.

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22 PARALLEL I/O BUFFER OVERFLOW
alternates with
PRESS GO TO CONTINUE

Indicates the parallel buffer has overflowed.

1. The current data in the print buffer will be lost.
2. Press [Go] to resume printing and then resend the job.

40 EIO X DATA ERROR
alternates with
PRESS GO TO CONTINUE (4500)
-or-
40 EIO BAD TRANSMISSION (4550)

A connection with the card in the specified slot has been broken

1. Check that all cables are connected to the EIO ports and that the EIO board is seated properly.
2. If possible, print to another network printer to verify the network is working properly.

Note

All data in the print buffer will be lost.

41.3 UNEXPECTED PAPER SIZE
alternates with
CHECK PAPER IN TRAY X (4500)
-or-
41.3 UNEXPECTED PAPER SIZE
alternates with
LOAD TRAY X [TYPE][SIZE] (4550)

A tray is configured for a specific paper size, but the sheet loaded is a different size. This error often occurs when the printer is multifeeding.

- Load the requested size media in tray.

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41.5 UNEXPECTED PAPER TYPE
alternates with
CHECK PAPER IN TRAY X

A tray is configured for a specific media type, but the printer detects a different media type loaded. The most common cause for this error is a jam at registration plate (under the ITB) where the customer does not remove the paper. The engine tries to check the OHT sensor and receives an error message.

1. Verify that the correct media type is loaded in the input tray and the printer control panel is configured correctly.
2. Clean the detection windows of OHT sensors 1 and 2.

49.ERROR XXXX
CYCLE POWER

Indicates that a firmware error occurred that caused the processor on the formatter to abort operation. This type of error can be caused by invalid print commands, corrupt data, or invalid operations. In some cases, electrical noise in the cable can corrupt data during transmission to the printer. Other causes include poor quality parallel cables, poor connections, or home-grown applications. On rare occasions, the formatter is at fault and is usually indicated by a 79 Service Error.

1. Turn the printer off and on to reset the printer.
2. Verify that all cables are connected.
3. Cancel all print jobs then resend. Try to isolate any offending print job.
4. Delete the print job from the Windows spooler or from the print server.
5. If the formatter pan assembly or DC controller was removed, make sure the ribbon cable between the DC controller and the interconnect PCB is connected.

(Continued on next page.)

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49.ERROR XXXX CYCLE POWER
(continued)

Note

The printer control panel will display 49 (FFFF) and the display will be dark if the ribbon cable is not connected.

To verify that the formatter is functioning properly, run the formatter tests available in the diagnostics mode. If the formatter passes, the formatter is not defective. DO NOT replace the formatter.

49 ADAC or AFAC

Indicates that the printer is printing a PostScript file using Windows 3.1 or 9x.

- No action required.

49 FF01 to FF05

An NEC firmware ROM error has occurred.

- Replace the firmware.

49 FF02

Unsupported EDO memory has been installed.

- Remove unsupported memory.

49 04CC

Indicates a media timing issue. This occurs when printing multiple copies of transparencies or heavy or glossy media with either the PCL or PostScript drivers. Or it could indicate a timing mismatch between the engine and formatter.

49 04E7

Occurs during decompression of the strip buffers when the end of the strip marker is missing. This is triggered by one of the following: 1) Marker is corrupt; 2) Strip buffer size given to HiLite is too small; 3) Strip buffer size given is too large.
(Continued on next page.)

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49 04E7
(continued)

Note

This error is primarily associated with the firmware and should not require a new formatter.

49 04FF

A large print job (800 to 1200 pages) or complex graphics can cause the printer to quit printing.
Two courses of actions are available:

- Determine the page that is causing the failure. If there is an image on the page, try to move the image down on a portrait page or left on a landscape page to move the image out of the strip that is failing. The movements will need to be very small so as not to cause the next strip to fail.
- Put the printer in Lossy mode with a sequence of PJL commands. (Lossy compression is the process of compressing a file such that some data is lost after the file is compressed and decompressed.) Use the following series of commands to put the printer into Lossy mode:
  ESC%-12345X@PJL
  @PJL Default Service mode=HPBOISEID
  @PJL Default Diagnostics=ON
  @PJL Enter Language = PCL
  ESC%-12345X@PJL
  Esc*z9999P
  Esc*z50P
  Esc*z201X

  To turn off Lossy mode once the file has printed, use the following commands:
  ESC%-12345X@PJL
  @PJL Default Diagnostics=OFF
  @JPL Default Service Mode=EXIT
  @PJL EOJ
  ESC%-12345X@PJL

(Continued on next page.)

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49 04FF
(continued)

Putting the printer in Lossy mode might affect performance and print quality.

49 FFFF

Issue reported by life test when replacing the fuser. This error might also occur during the boot cycle.

- Replace the formatter.

49FFOX

This error message allows you to scroll through the printer control panel to obtain all of the error information.

- No action required.

49 OBOA

A request is not understood. This error message is generated when the I/O card does not support a command that was sent to it.

- Check the command being sent; the I/O card might not support a particular feature.

49 OB22

This error message is generated when the I/O card receives a control panel menu action that it does not recognize.

- Verify the action being sent.

50.x Fuser Error

The fusing assembly contains two heating bulbs, two thermo-switches, and two thermistors. AC power is provided to the fusing assembly via the DC power supply, which is controlled by the DC controller PCB. The thermistors monitor the temperature of the fusing assembly and provide feedback to the DC controller PCB to regulate the fusing temperature. The two thermo-switches are wired in series with the fusing bulbs, and “open” if the temperature exceeds 240° C (464° F). (Continued on next page.)

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50.x Fuser Error
(continued)

X Description:
1 Low temperature error
2 Fuser warm-up service
3 High fuser temperature
4 Faulty fuser
5 Fuser voltage mismatch (verify that you have NOT installed a 110V fuser in a 220V printer or vice-versa).
6 Fuser heater cutoff
7 Fuser motor malfunction (see recommended action for 50.7 Fuser error)

Note

Closely inspect the mechanical linkage. The gears along the gear “drive” path can bind the gears, which will prevent M1 from rotating.

50.7 FUSER ERROR

The fusing motor (M1) drives the fusing assembly, the paper transport (web) assembly, ITB lift mechanism, transfer roller, transfer roller lift mechanism, and the face down output delivery drive assembly. A 50.7 fuser error appears when PS6 detects no motion within the fuser. Photosensor PS6 is the fusing unit pressure switch.

1 Power cycle the printer to try to clear the message.

2 Remove the left-side cover of the printer. Verify that the fusing motor (M1) connector is seated firmly into J102 of the feed PCB.

3 Ensure that the connector at J110 of the feed PCB is firmly seated (this connector contains the wiring for PS6, which provides fuser-motion feedback).

Note

Closely inspect the mechanical linkage. The gears along the gear “drive” path can bind the gears, which will prevent M1 from rotating.

(Continued on next page.)

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50.7 FUSER ERROR
(continued)

4 If the error persists, Observe the drive shaft of M1 while powering on the printer. If this shaft DOES NOT rotate, your failure is related to the motor drive circuitry. Referring to the printer's wiring diagram, verify that connectors J102 and J106 of the feed PCB are firmly seated. If the error still persists, replace the fusing motor and the feed PCB in sequence.

5 If the shaft rotates (both forward and reverse), and the 50.7 fuser error appears, the cause of the error is related to the motion feedback circuitry. Remove the fusing assembly and verify the sensor flag is in good condition and functional. Verify the connector at sensor PS6 is firmly seated. Clean the sensor of dust and debris. If the error persists replace sensor PS6

51 LASER ERROR (4500)
-or-
51.X PRINTER ERROR (4550)

Indicates a beam detect error or laser failure.

1 Turn the printer off and on to reset the printer.

2 Verify connectors J1102 on the laser driver PCB and J1008 on the DC controller are seated properly.

3 Verify connectors J551 on the beam detect PCB and J1006 on the DC controller are seated properly.

4 Replace the laser/scanner unit.

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52 SCANNER ERROR (4550)
-or-
52 PRINTER ERROR (4550)

Indicates that a scanner error has occurred.

1 Turn the printer off and on to reset the printer.

2 Verify connectors J551 on the beam detect PCB, J1103 on the scanner motor, and J1006 on the DC controller are fully seated and connected correctly.

3 Replace the laser/scanner unit.

53.XY.ZZ
PRINTER ERROR

Indicates a memory error. If a DIMM caused the error, the DIMM will not be recognized (configured).

X = MemoryType	**Y = Device LocationZZ = Error Number**
0 = ROM	0 = Onboard0 = Unsupported memory
1 = RAM	1 = DIMM slot 11 = Unrecognized memory
	1 = DIMM slot 13 = Failed RAM test
	2 = DIMM slot 2
	3 = DIMM slot 3

1 Verify that the DIMM is installed correctly.

2 Turn the printer off and on to reset the printer.

3 Remove and replace the DIMM that caused the error.

54.1 PRINTER ERROR

Indicates that an internal power failure has occurred.

1 Turn the printer off, and then turn the printer back on.

2 Replace the high-voltage power supply.

3 Check the fuser to ensure jams have not occurred.

(
Continued on next page.)

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54.1 PRINTER ERROR
(continued)

CAUTION

54.1 errors can be caused by damaging the thermistor while clearing fuser jams.

4 Make sure there is not a fluctuation in the power supply to the printer. Check that the electrical specifications are met.

5 Replace the low-voltage power supply.

54.2 PRINTER ERROR

An error 54.2 indicates that a problem exists with the carousel assembly. Either the carousel is not rotating or the sensor has failed. Drive motor (M3) provides drive for the toner cartridge carousel. If motion is not detected, a 54.2 error appears. M3 is a 6-phase stepping motor and receives its drive signal from J203 of the developing PCB. Photosensor PS10 monitors “movement” (and the position) of the toner cartidge carousel. Different width tabs (four tabs, one for each cartridge) on the left-end of the carousel housing pass through PS10 to provide positioning information. The black toner cartridge tab is the home position. Toner cartridge position within the carousel is monitored by PS11. If PS11 fails or is improperly connected, a 54.2 error appears. Another indicator of this is that the carousel starts to rotate then stops immediately. A 54.2 error message can also occur if the sensor is installed backwards.

1 Turn the printer off and then on to reset the printer.

Open the color toner door and look for an obstruction. If necessary, remove the toner cartridges individually by manually releasing the carousel brake and rotating the carousel around to each cartidge position and removing the cartridges. Turn the printer off and on to reset the printer.

(continued on next page)

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54.2 PRINTER ERROR
(continued)

Note

The printer CANNOT operate with the top cover removed unless the carousel brake has been released or removed.

2 Verify the carousel drive motor wiring harness is firmly seated into connector J203 of the developing PCB.

3 Verify PS10 is working correctly and not excessively dirty (clean if necessary) and that the wiring harness is firmly seated into both the sensor assembly and connector J206 of the developing PCB.

4 Verify PS11 is connected and functioning properly.

5 Verify all connectors to the developing PCB and the DC controller PCB are firmly seated.

6 Verify that the rotary drive assembly is working. Replace it on older units with more than 50K of life.

The following URL provides help with cartridge installation and removal: http://www.hp.com/go/ljsupplies.

54.3 PRINTER ERROR

The printer is NOT receiving data back from the density sensor (PS14). PS14 is located in the bottom of the imaging drum drawer. During calibration routines, a series of images are written on the imaging drum and the densitometer measures the density of the image (e.g. amount of toner that is placed into the drum). These measurements provide the feedback to ensure image quality is consistent throughout the life of the consumable.

1 Verify the densitometer is clean; perform the toner density sensor cleaning procedure in Chapter 7 of the online user guide.

2 Inspect the density sensor wiring harness for damage. The harness runs from the density sensor through the left-side upper

(continued on next page)

54.3 PRINTER ERROR
(continued)

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control arm of the imaging drum drawer to J1010 of the DC controller PCB. Verify that the cable is firmly seated into the J1010 of the DC controller PCB.

3 If the error persists, replace the density sensor assembly.

54.4 PRINTER ERROR

Optional equipment is not recognized.

- Turn the printer off and on to reset the printer.

54.5 PRINTER ERROR

Indicates a waste toner sensor malfunction.

1 Turn the printer off and on to reset the printer.

2 Remove the drum cartridge and clean the waste toner detection window with a dry cloth.

3 Clean the waste toner sensor unit at the printer side with a dry cloth.

4 Check the light guide and clean it if necessary. Replace the light guide if the ends are scarred.

5 Reconnect the waste toner sensor unit connector and the DC controller PCB connector (J1009) correctly.

6 Replace the waste toner sensor (PS13).

54.6 PRINTER ERROR

The OHT sensor has reported an error condition. This can be caused by contamination in the connectors, a blocked sensor, or a defective sensor.

1 Remove the ITB and verify that the OHT sensor prism is in place.

2 Lift the registration flap and verify that the OHT sensor is not blocked.

3 Remove the ITB drawer and inspect the drawer connectors for contamination such as a piece of paper.

(Continued on next page.)

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54.6 PRINTER ERROR
(continued)

4 If the error persists, verify that all connectors are firmly seated.

5 Replace ITB drawer.

55 DC CONTROLLER ERROR

The print engine is not communicating with the formatter. The communication link between the formatter and DC controller was lost. This can occur due to a timing error or intermittent connection between the formatter and DC controller.

1 Turn the printer off and on to reset the printer.

2 Reseat the connectors between the formatter and DC controller.

Only if the error persists, replace the DC controller making sure to perform the calibration and color plane alignment procedures.

57.1 FAN FAILURE

The printer detected that the fan (an exhaust fan located in the upper, left rear corner of the printer) was not rotating. This fan operates off +24Vdc and is enabled by the DC controller PCB's microprocessor.

1 Turn the printer off and on to reset the printer. Visually check to see if the fan is rotating (if you cannot see any rotation, place your hand over the outlet vents to see if exhaust air is moving).

2 Remove the printer's left-side cover. Check to see if anything is preventing the fan from rotating freely.

3 Verify that the fan's connector is firmly seated into connector J208 of the developing PCB.

4 If the error persists, replace the fan.

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57.2 FAN FAILURE

The printer detected that the fan (an exhaust fan located in the upper, right rear corner of the printer) was not rotating. This fan, operates off +24Vdc and is enabled by the DC controller PCB's micro-processor.

1. Turn the printer off and on to reset the printer. Visually check to see if the fan is rotating (if you cannot see any rotation, place your hand over the outlet vents to see if exhaust air is moving).
2. Remove the printer's left-side cover. Check to see if anything is preventing the fan from rotating freely.
3. Verify that the fan's connector is firmly seated into connector J208 of the developing PCB.
4. If the error persists, replace fan.

57.3 FAN ERROR alternates with CLOSE UPPER FRONT DRAWER

The intake fan is located in the front, center of the drum drawer. (The drum drawer is referred to as the upper front drawer for end users.) Fan rotation stops when the drawer is opened. A fan error message appears when fan motion is NOT detected by the DC controller's micro-processor if the drawer is closed and the printer is not in PowerSave mode.

1. Turn the printer off and on to reset the printer. Due to the difficulty of observation, listen to hear if the fan is rotating.
2. Verify FM3 connector 27 is not damaged or broken. Verify the fan connector is firmly seated into connector J1022 of the DC controller PCB.
3. Verify the fan connector is firmly seated into connector J1022 of the DC controller PCB.
4. If the error persists, replace the fan.

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62 NO SYSTEM

Indicates there is a printer firmware problem. Either there is no firmware DIMM installed or the DIMM has failed. If the formatter was just replaced, make sure all DIMMs have been moved from the old formatter to the new one.

1 Turn the printer off and on to reset the printer.

2 Reseat the firmware DIMM, making sure it is in the slot surrounded by a white line with the text “ROM ONLY IN THIS SLOT.”

62.X PRINTER ERROR

Indicates that a problem exists with the internal memory.

X = Description
0 = Internal memory
1-3 = DIMM slots 1 through 3.

1 Turn the printer off and on to reset the printer.

2 Reseat and then replace the DIMM.

3 Replace the formatter board.

62.M BAD MPTR

The firmware ran out of memory trying to build the static entity directory.

1 Check printer settings to determine which values have been changed.

2 Clear the message by pressing [Go].

68 NVRAM ERROR CHECK SETTINGS

One or more settings saved in the non-volatile storage device are invalid. Some settings might have been reset to factory defaults.

1 Check printer settings to determine which values have been changed.

2 Clear the message by pressing [Go].

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68 NVRAM FULL CHECK SETTINGS

Indicates that a non-volatile storage device is full. Some settings might have been reset to factory defaults.

1. Check printer settings to determine which values have been changed.
2. Clear the message by pressing [Go].

79 SERVICE (XXXX) PRINTER ERROR

Description:
A hardware error has occurred.

X=Description
01XX = IO ASIC register error
02XX = video ASIC register error
03XX = IDE ASIC register error

1. Reseat the formatter.
2. Reseat the firmware DIMM.
3. Run formatter diagnostics.
4. Replace the firmware DIMM.
5. Replace the formatter.

80 SERVICE (XXXX) EIO ERROR

Description:
A critical EIO failure has occurred. X indicates the slot number of the device. XXXX indicates the error type.

1. Turn the printer off and on to reset the printer.
2. Reseat the EIO card.
3. Replace the EIO card.

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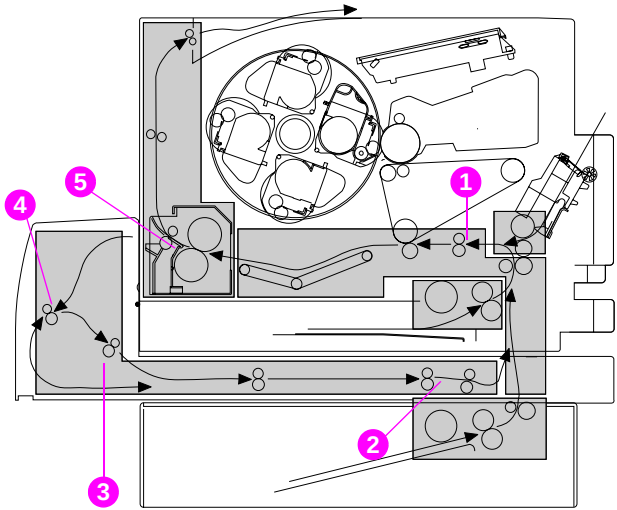
Paper jams

Paper jams are posted if paper fails to arrive at or clear the paper path sensors in the allowed time. Dedicated paper sensors (PS2, PS7, PS3101, PS3103, and PS3104) detect whether paper is present in the sensor and if the paper is fed normally (see the figure below). When the control board detects a paper jam, it immediately stops the printing process and displays the appropriate paper jam message for the sensor that detects the paper jam.



Paper jam sensors (shown with the optional 500-sheet paper feeder and duplex unit installed)

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Paper jam sensors

1	Registration paper sensor (PS2)
2	Duplex paper-pick sensor (PS3104)
3	Reversed unit paper sensor (PS3103)
4	Reversed paper sensor (PS3101)
5	Delivery paper sensor (PS7)

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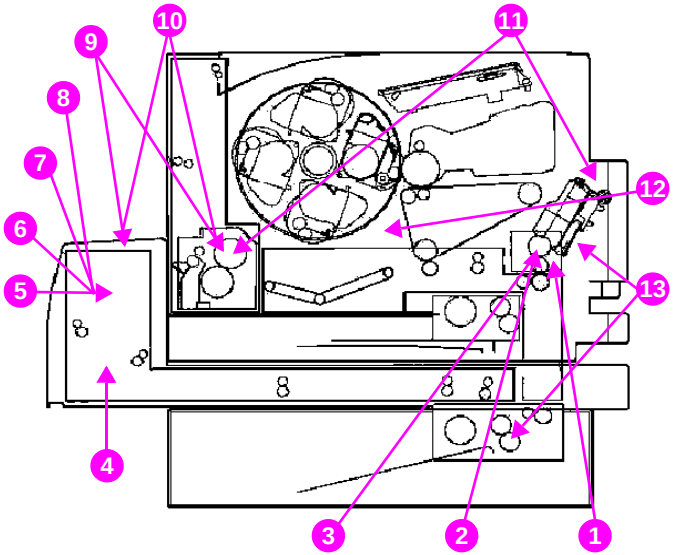
Paper jam locations

Use the figure below to troubleshoot paper jams in the printer. For instructions on clearing paper jams, see the sections later in this chapter.



Paper jam locations (shown with the optional 500-sheet paper feeder and duplex unit installed)

See the next page for the associated error messages.

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Table 1-1 4500 Jam locations and associated error messages

1	13.11 Paper in the paper path is too long. Check the Tray 1 area. Check the entire paper path.	8	13.3 Jam in duplex reverse unit. Inspect the rear of the duplex unit and the duplex tray.
2	13.10 Paper in the paper path is too short. Check the Tray 1 area. Check the entire paper path.	9	13.2 Jam in fusing area. Check the fuser assembly, output assembly, and duplex unit.
3	13.9 Irregular paper jam in the paper path. Check the Tray 1 area. Check the entire paper path.	10	13.1 Jam in fusing area. Check the fuser assembly, output assembly, and duplex unit.
4	13.8 Door open jam. Check the rear door, duplex cover, and rear output door. 13.7 Jam in paper feed area. Check the entire paper path.	11	13.1 Paper jam. OPEN MIDDLE FRONT DRAWER alternates with CHECK IN REAR OF DRAWER. Check the middle front drawer. Check and pull out the fuser.
5	13.6 Jam in duplex paper feed area. Inspect the rear of the duplex unit and the duplex tray.	12	13.1 Paper jam: Check in rear of drawer. Check the rear of the middle front drawer. Reseat the transfer roller.
6	13.5 Jam in duplex paper feed area. Inspect the rear of the duplex unit and the duplex tray.	13	13.0 Jam in input feed area. Check the input trays and duplex unit.
7	13.4 Jam in duplex unit. Inspect the rear of the duplex unit and the duplex tray.	14	13.12 Paper did not clear the input sensor in time.

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Table 1-2 4550 Jam locations and associated error messages

1	13.25 Paper in the paper path is too long. Check the Tray 1 area. Check the entire paper path.	8	13.10 Jam in duplex reverse unit. Inspect the rear of the duplex unit and the duplex tray.
2	13.24 Paper in the paper path is too short. Check the Tray 1 area. Check the entire paper path.	9	13.6 Jam in fusing area. Check the fuser assembly, output assembly, and duplex unit.
3	13.23 Irregular paper jam in the paper path. Check the Tray 1 area. Check the entire paper path.	10	13.5 Jam in fusing area. Check the fuser assembly, output assembly, and duplex unit.
4	13.21 Door open jam. Check the rear door, duplex cover, and rear output door. 13.20 Jam in paper feed area. Check the entire paper path.	11	13.5 Paper jam. OPEN MIDDLE FRONT DRAWER alternates with CHECK IN REAR OF DRAWER. Check the middle front drawer. Check and pull out the fuser.
5	13.13 Jam in duplex paper feed area. Inspect the rear of the duplex unit and the duplex tray.	12	13.5 Paper jam: Check in rear of drawer. Check the rear of the middle front drawer. Reseat the transfer roller.
6	13.12 Jam in duplex paper feed area. Inspect the rear of the duplex unit and the duplex tray.	13	13.1 Jam in input feed area. Check the input trays and duplex unit.
7	13.11 Jam in duplex unit. Inspect the rear of the duplex unit and the duplex tray.	14	13.2 Paper did not clear the input sensor in time.

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General paper path checklist

- Verify that media is correctly loaded in the input trays and that all length and width guides are set correctly.
- Clean the printer. Toner and paper dust in the paper path inhibits free movement of media through the printer and blocks the sensors.
- Vary the input and output selections of the printer to determine if the problem is associated with a particular area of the printer.
- Worn separation pads on the multi-purpose tray cause multifeeds. Check the condition of the pickup rollers and customer replaceable feed roller. Bent separation tabs cause misfeeds and multifeeds. Replace the tray if necessary.
- Defective paper tray switches can cause paper jams by indicating the wrong size paper to the formatter.
- Scraps of paper left in the paper path can cause intermittent paper jams. Always check that the paper path is clear when cleaning the printer and when clearing paper jams. Also, remove the fuser and carefully check it for jammed paper.
- Scraps of paper may be difficult to find in the following areas.
  - The ITB drawer connector on the engine side
  - The OHT sensor under the registration plate
  - The fuser (Remove the fuser and check it carefully.)
  - The web transport (Paper scrapes are sometimes found in the center of the web transport before the fuser.)

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Print media checklist

Many print problems are caused by printing on media that does not meet specifications. See “Supported media weights and sizes” on page 90 and the *HP LaserJet Printer Family Print Media Guide* for detailed information about media specifications. In addition, the following list helps to quickly check common media-related printing problems.

- Rough paper causes poor transfer and smeared print problems. Check that the paper meets specifications for smoothness.
- The printer handles only 60 to 159g/m^2 (16- to 42-pound) bond media, and 0.13 mm (5-mil) thick transparencies.
- Paper that has absorbed moisture causes paper feed problems. If the printer is used in a humid area, suspect damp paper as a cause of recurring paper feed and print quality problems.
- Damaged paper, paper with ragged edges, or paper whose edges stick together cause paper jams.
- Using paper that has already been through a laser printer or a copier could cause paper jams.

CAUTION

Using media that does not conform to the specifications listed here or in the *HP LaserJet Family Print Media Guide* can cause problems that require service. This service is not covered by the Hewlett-Packard warranty or service agreements.

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2 Service tools

Overview

This chapter provides information on service tools that service personnel can use to verify and manipulate internal printer settings and diagnostics.

Note

Only authorized service personnel should use the service mode.

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Cold Reset

Cold reset clears all data from the print buffer and returns the printing menu and the configuration menu to the factory default settings.

To perform a cold reset

Select RESTORE FACTORY DEFAULTS from the Reset menu for the HP LaserJet 4500 series

Select RESTORE FACTORY SETTINGS from the Reset menu for the HP LaserJet 4550 series

Service mode

Service mode allows for the modification of page counts and certain registration values for the printer. In the LaserJet 4500 series, when the configuration page is printed while in service mode, all event log messages are printed as well. The LaserJet 4550 series event log can be printed from the Information menu. If both the formatter and DC controller are replaced at the same time, service mode will need to be utilized to execute the color plane registration sequence to ensure optimum print quality.

To access service mode

1. Hold down the **CANCEL JOB** key and **SELECT** key while turning the printer on until the display is blank and the 3 LEDs are on.
2. Press the right side of the **MENU** key, and then press the **SELECT** key.

   Service mode will be displayed on the front panel briefly followed by two rows of asterisks. The printer will go through its normal start up cycle then display SERVICE MODE on the front panel.
3. Press the **MENU** key to access the Service menu.

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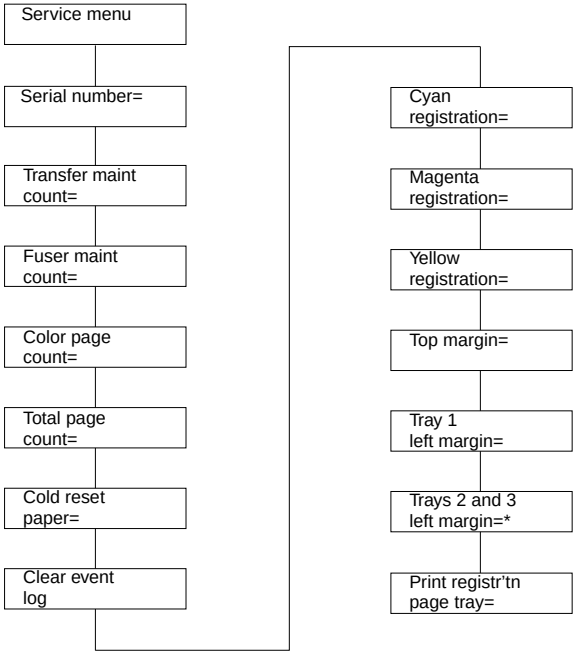

Service mode menu map

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Service menu items

The Service menu provides the options listed below. Press the **ITEM** key to scroll through the Service menu.

- Serial number
- Transfer maintenance count
- Fuser maintenance count
- Color page count
- Total page count
- Registration page (see page 55)
- Diagnostics mode (see page 59)
- Paper path test (see page 63)
- Developer test (see page 64)
- Drum test (see page 64)
- Door sensor test (see page 67)
- Formatter diagnostics (see page 60)
- Engine test (see page 68)

See the page number referenced opposite the item for more details.

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Registration page

Note

You must set the registration values if both the formatter and DC controller are replaced at the same time or if the formatter was previously installed in another printer. If the DC controller is replaced by itself, these values are copied from the formatter to the DC controller. If a new formatter is replaced, or if an NVRAM initialization is performed (see page 69), these values are loaded onto the formatter from the DC controller.

Printing a registration page

1 Scroll through the Service menu until `PRINT REGISTRATION PAGE` is displayed.

2 Select the paper tray to pull paper from (only when setting left side margins will the tray actually matter).

3 Press **SELECT** to print the registration page.

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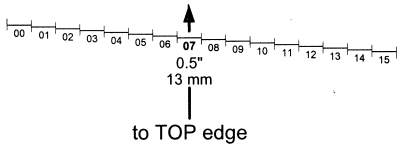

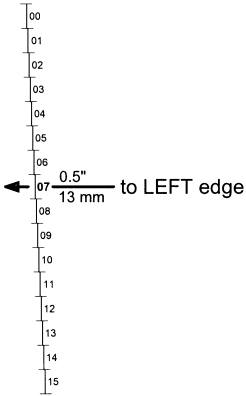

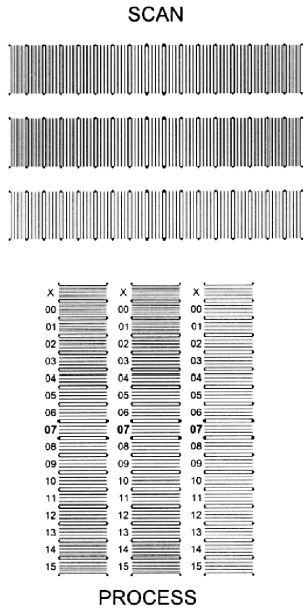

Registration page

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Setting registration numbers

On each of the color bars in the process section are bolded numbers that indicate the current number set on the control panel. These bolded numbers will always be in the middle of the bars. To set the correct value for each of the colors, look at the lines within the bar and find the grouping that has the color line directly on top of the black line (it will have more white space). Print at least five registration pages to see if the new settings are correct.

Note

Using a magnifying glass to look at the lines will help in selecting the best number.

Setting the registration number:

1. Use the **ITEM** key to select the appropriate color (cyan, magenta, or yellow) to view or change its registration number.
2. Press the **+ VALUE -** key to change the registration number to the one identified.
3. Press the **SELECT** key to enter the value.

Setting margin numbers

The top margin number is not tray dependent like the left side margin. You can print the registration page from whichever tray has paper. Using a ruler, measure from the top edge of the paper to the series of lines. Find the line that is 13 mm (0.5 in) away from the edge of the paper.

Setting the top margin registration value:

1. Press the **ITEM** key to scroll through the Service menu until top margin is displayed.
2. Press the **+ MENU -** key until the number to be entered is displayed.
3. Press the **SELECT** key to enter the number.

Print another registration page and the number just entered will align with the arrow and be bolded.

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The left-side margin setting is tray dependent. Tray 1 has its own number while Trays 2 and 3 are combined. The procedure is the same as the top margin with one exception. The page must be printed from the tray that will be adjusted.

Printing from Tray 1:

1. Press the **ITEM** key until `PRINT REGISTRATION PAGE TRAY = 1` (default) is displayed.
2. Press the **SELECT** key.
3. Measure from the left side of the paper to the lines and find the line that is 13 mm (0.5 in) from the edge of the paper.

If the number for the line is different then the current number:

1. Press the **ITEM** key until `TRAY 1 LEFT MARGIN = #` is displayed.
2. Press the **+ VALUE -** key to change the number to the number required.
3. Press the **SELECT** key.

Printing from Tray 2 and 3:

1. Press the **ITEM** key until `PRINT REGISTRATION PAGE TRAY = 2` or `3` is displayed.
2. Press the **SELECT** key.
3. Measure from the left side of the paper to the lines and find the line that is 13 mm (0.5 in) from the edge of the paper.

If the number for the line is different then the current number:

1. Press the **ITEM** key until `TRAY 2 AND 3 LEFT MARGIN = #` is displayed.
2. Press the **+ VALUE -** key to change the number to the number required.
3. Press the **SELECT** key.

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Diagnostics mode

This section provides an overview of the diagnostic tools incorporated into the HP Color LaserJet 4500 series and 4550 series printers.

CAUTION

Use caution when performing printer diagnostics to avoid risk of injury. Only trained service personnel should access the diagnostic mode with the skins removed.

There are two diagnostic sections built into the firmware, one for the formatter and the other for the engine. Each section contains different tests that allow the service technician to verify printer functionality. While in diagnostic mode there are no error messages associated with these tests. Therefore, determination of the problem will rely on the technicians skill. To exit diagnostic mode, turn the printer off.

Note

In the 4550 series, you can abort a test run by pressing the [CANCEL JOB] key and holding it down until the display shows the menu again. In some cases, it will take several seconds. To cancel the NVRAM test while it is running, press the [CANCEL JOB] key and hold it down until the display show the menu again. NVRAM is put back in its original form, and an error is logged in the Fault log.

When the Attention LED is on, then there ahs been an error in the test. Press the [MENU] key to get to the Fault log menu, the [ITEM] key to see the different log messages, and the [-VALUE+] key to scroll the message back and forth.

Accessing diagnostics

- To access the diagnostics mode, hold down the left side of the **ITEM** key and turn on the printer.

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Formatter diagnostics

Formatter diagnostics are designed to be used by qualified service personnel. This set of tests are designed to thoroughly test the functionality of the formatter. If all the tests pass, the formatter is working correctly and it is likely that the problem resides elsewhere. Listed below are descriptions of the formatter tests available.

CAUTION

NVRAM can be lost if the printer is turned off during testing.

Note

In the 4550 series, you can abort a test run by pressing the [CANCEL JOB] key and holding it down until the display shows the menu again. In some cases, it will take several seconds. To cancel the NVRAM test while it is running, press the [CANCEL JOB] key and hold it down until the display show the menu again. NVRAM is put back in its original form, and an error is logged in the Fault log.

When the Attention LED is on, then there ahs been an error in the test. Press the [MENU] key to get to the Fault log menu, the [ITEM] key to see the different log messages, and the [-VALUE+] key to scroll the message back and forth.

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Formatter diagnostics

Test	Description
REPEAT	If set to yes, the tests will run continuously until interrupted. In the **4550 series only**, [CANCEL JOB] will abort the test.
ON FAULT	The following will occur for each setting: BREAK – The test will stop when a failure occurs. PAUSE – Stops the test for a short period of time then resume with the remaining tests. CONT – Continues to execute the tests even when a failure occurs.
ROM CRC	**4500 series only.** Tests the firmware ROM for correct functionality.
DRAM	Tests the on-board RAM and the DIMMs.
SRAM 1	Tests the SRAM inside the ASIC.
SRAM 2	Tests the SRAM physically mounted on the formatter.
NVRAM	**CAUTION** Do not interrupt the NVRAM test. Doing so will cause the printer to lose all NVRAM values. Tests the formatter NVRAM. This test takes 18 minutes to run and should only be used when NVRAM values are being lost. In almost all cases, this test should never be run. In the **4550 series only**, [CANCEL JOB] will abort the test. Do not turn off the printer or corruption of the NVRAM could result; if the NVRAM test must be aborted, use the [CANCEL JOB] key.
EXECUTE TESTS	Runs the selected tests.

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Engine diagnostics

A good understanding of how the printer operates is required to use the engine diagnostics successfully.

To have a better view of the areas being exercised, remove the left-side cover and the ITB drawer. Defeat the two ITB drawer switches located on the left side of the drawer cavity.

Listed below are the diagnostics available and a brief description of what the diagnostic will do.

Engine diagnostics

Menu item	Selectable value	Description
Continuous	N (default)	Selected test will run once. Selected test will run in a continuous loop. In the **4550 series only**, [CANCEL JOB] will abort the test.
	Y (press **CANCEL JOB** to exit)	Turns on the motors that control the paper path section of the printer. In the **4550 series only**, [CANCEL JOB] will abort the test.
Paper Path Test		Rotates the carousel and the developers. In the **4550 series only**, [CANCEL JOB] will abort the test.
Developer Test		Turns on the drum drive motor that drives the drum and ITB. In the **4550 series only**, [CANCEL JOB] will abort the test.
Drum Test		Displays the state for each of the paper path sensors and switches. In the **4550 series only**, this test will continue running until the [CANCEL JOB] key is pressed.

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Engine diagnostics (continued)

Menu item	Selectable value	Description
Path Sensors		Displays the state for each of the door and drawer switches. In the **4550 series only**, this test will continue running until the [CANCEL JOB] key is pressed.
Door Sensors		Selected test will run once. Selected test will run in a continuous loop. In the **4550 series only**, [CANCEL JOB] will abort the test.

Paper path test

Note

If an error occurs during the paper path test, the message PATH_1PAPER PATH TEST FAILED displays.

1 Press the **ITEM** key until you see ENGINE DIAGS PAPER PATH TEST.

2 Press the **SELECT** key to activate the test. While the test is running ENGINE DIAGS E1:PAPERPATH displays in the front panel.

The test takes approximately 15 seconds to run.

Components exercised by the paper path test include the fusing motor (M1), paper path motor (M2), and associated gears and assemblies. The paper pick roller for Tray 2 can be activated by manually activating the paper pick solenoid (SL2). This test will not pick paper and move it through the paper path. To test this function, run a configuration page. For multiple pages, select CONTINUOUS CONFIGURATION PAGE in the control panel.

The paper path test allows the service technician to verify the operation of components within the paper path. When the test is initiated, both M1 and M2 are activated. You will see the ITB lift cams rotate once and the ITB drive gear turn briefly. The remaining portion of the test allows both M1and M2 to run, thus exercising the associated gears and rollers.

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Developer test

The developer test rotates the carousel stopping at each toner cartridge and rotating the developer sleeve. For the best view of the carousel and the toner cartridge sleeves, remove the drum cartridge. The drum drawer must be closed before the test can run.

1. Press the **ITEM** key until `ENGINE DIAGS DEVELOPER TEST` is displayed.
2. Press the **SELECT** key to run the test. The front panel displays `ENGINE DIAGS E2:DEVELOPER` while the test is running. Watch the carousel and make sure that the toner cartridge developer sleeve rotates. The sequence is black followed by a pause, then magenta, cyan, and finally yellow.

The test takes approximately 35 seconds. While the developer test is running you will see the drum turn if it is installed, as well as the drive gear for the ITB.

Drum test

The drum test exercises the drum drive mechanism. In addition, the fuser motor is turned on to allow the lift cams for the ITB to be rotated into the ITB up position.

1. Press the **ITEM** key until `ENGINE DIAGS DRUM TEST` displays.
2. Press the **SELECT** key to run the test. The front panel displays `ENGINE DIAGS E3:DRUM` while the test is running.

Watch to see if the ITB lift cams turn and if both the drum drive gear and the ITB drive gear is rotating.

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Path sensors

The path sensors test allows the paper path sensors and switches to be tested for correct operation. The table below shows the correlation between the identifier on the front panel and the sensor or switch it represents.

Paper path sensors and switches

Identifier	Name	Description
A	PS8	Tray 2 paper detect sensor
B	PS3	Tray 1 last piece of media pulled sensor
C	PS4	Tray 1 paper detect sensor
D	SW801	Tray 2 paper size switch 2
E	SW802	Tray 2 paper size switch 1
F	SW803	Tray 2 paper size switch 0
G	PS3001	Optional Tray 3 paper detect sensor
H	SW3001	Optional Tray 3 paper size switch 2
I	SW3002	Optional Tray 3 paper size switch 1
J	SW3003	Optional Tray 3 paper size switch 0
K	PS10	Carousel position sensor
L	PS11	N/A
M	N/A	500-sheet feeder: 1=installed, 0=uninstalled
N	PS9	Top output tray full sensor

1 Press the **ITEM** key until `ENGINE DIAGS PATH SENSORS` is displayed on the front panel.

2 Press the **SELECT** key to activate the test. The front panel will display A through N with a binary value below it.

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When running this test, make sure the ITB drawer is installed with Tray 2 and Tray 3 (if installed) removed. In this state, the default value on the front panel should be: 0X111111110010, where the x can be either 0 or 1. If there is any other value, then there is a possible problem. Identify the sensor or switch in the table above and test to see if the value changes. Cassette paper-size settings for each tray are described in the table below.

Paper-size settings

Paper Size	Tray 2 switches (DEF)	Tray 3 switches (HIJ)
A4	000	000
B5	001	001
Custom (A5)	010	011*
Custom (B5 ISO)	011	011*
Letter	100	100
Executive	101	101
Legal	110	110
No tray installed	111	111

* These values are the same for Tray 3.

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Door sensor test

The door sensor test allows service personnel to open and close doors on the printer while watching the sensor status on the front panel. Switches 4 and 5 are in series with each other, which causes the value to toggle under identifier A.

Once the door sensor test is initiated, the front panel displays the status for each sensor listed in the table below. As a door is opened and closed, the state of the sensor changes the indicator values on the front panel.

Sensor status

Identifier	Name	Description
A	SW4 and SW5	Front and rear door switches.
B	SW1 *	ITB drawer switch.
C	SW2 *	Toner cartridge door *.
D	SW3 *	Drum drawer switch *.
E	Drum detect	Detect if a drum cartridge is installed.
F	Fuser	Detects if fuser is installed. Changes the state of the sensor if not detected or removed when rear door is opened and closed.

* Activates (A) when opened.

1 Press the **ITEM** key until `ENGINE DIAGS DOOR SENSORS` is displayed on the front panel.

2 Press the **SELECT** key to activate the test.

The front panel displays A through F with a binary value below it. All the doors and drawers should be closed. In this state, the display will show all 0's. Open the doors and drawers one at a time to verify correct functionality. If operating correctly, the 0 will change to a 1. If a 1 is displayed with all doors and drawers closed, there is a bad switch or connection.

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Engine test

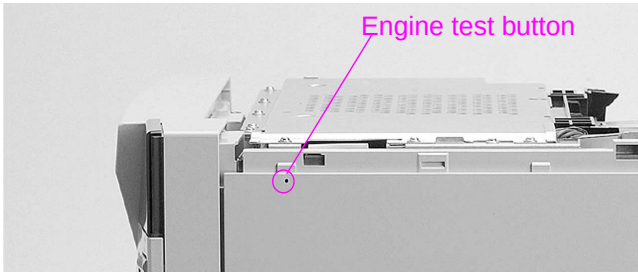
The printer has one test pattern (vertical lines). When an image defect appears, a test print can be made to identify the problem. The test print can be made by pressing the test print switch located on the right side of the printer (see figure below). A test pattern can be printed by pressing the test print switch once after the photosensitive drum has stopped and the printer has entered the standby mode. If the switch is held down, the test pattern is printed continuously. The switch can be used when paper is loaded in any tray other than Tray 1.

The engine test does the following:

- Verifies that the print engine is functioning correctly (the formatter PCB is completely bypassed during an engine test).
- Isolates printer problems.
- Checks and adjusts registration.
- Prints from Tray 2 or 3 only, not from Tray 1.
- Can be activated with the formatter PCB removed.

Note

For the printer to perform an engine test, Tray 2 or Tray 3 must be installed and loaded with paper, and the toner cartridges must be installed in the printer.



Location of the engine test button

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NVRAM initialization

NVRAM initialization should always be executed immediately after replacing the firmware or the formatter board. This procedure aligns the firmware with the formatter. Not performing NVRAM initialization could result in deterioration of print quality. Before initializing NVRAM, be sure to gather and write down the information listed below, if possible.

- Total page count and color page count.
  - Print a configuration page to obtain both page counts and the serial number.
- Percentage of life remaining for both the transfer kit and the fuser kit.
  - **A** From `SERVICE MODE` on the printer display panel, press **MENU**.
  - **B** Go to `SERVICE MENU` and press **ITEM**.
  - **C** Use the **VALUE +/-** keys to go to `TRANSFER MAINT COUNT=XXXXXXX` and write down the exact numbers shown.
  - **D** Go to `FUSER MAINT COUNT=XXXXXXX` and write down the exact numbers shown.
- Serial number.

To initialize NVRAM

1. Hold down both the **CANCEL JOB** and **SELECT** keys until all the LED lights are on, then release the keys.
2. Press **CANCEL JOB**.
3. Press **SELECT**.

After replacing the firmware or the formatter board, the following settings are changed or lost. If you do not wish to accept the new values, use Service Mode to enter the previous settings that you wrote down prior to initializing.

- Total page count and total color page count (counter resets to 0)
- Transfer kit percentage of life remaining (gauge resets to 100 percent)
- Fuser kit percentage of life remaining (gauge resets to 100 percent)

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- Printer serial number

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3 Power supply

Overview

Three power supplies are used to power various sections of the printer: AC, DC, and a high-voltage power supply. This chapter details the distribution of these power supplies.

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AC/DC power supply

The low-voltage power supply circuit supplies +24 Vdc and +5 Vdc, which is required for the printer, and 3.3 and 5 Vdc, which is required for the video controller.

+24 Vdc

- The paper pickup motor, scanner motor, and high-voltage power supply PCB use +24 Vdc.
- The front door switch or the rear door switch is deactivated by opening the drum cartridge drawer, ITB unit drawer, toner cartridge door, or delivery door. These switches are in series and disable the 24 Vdc when open.

+5 Vdc

- The sensors and the ICs on the DC controller PCB use +5 Vdc.
- The low-voltage power supply circuit monitors the 5 VS (volt signal) fed back from the connector PCB to ensure the 5 V power supply to the formatter.

+3.3 Vdc

- Formatter PCA
- DIMM
- EIO PCA

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Overcurrent/overvoltage protection

Each DC power supply circuit has an overcurrent protective function and overvoltage protective function. This prevents a power supply circuit failure by automatically interrupting the output voltage when anomalies such as a short develop on the loads that result in overcurrent flow or abnormal voltage.

Note

Protective functions remain active for two minutes after activation. Wait for at least 2 minutes to turn the power back on again.

If this function is activated and no DC voltage is output from the low-voltage power supply circuit:

1. Turn off the power switch (SW6).
2. Unplug the power cord.
3. Resolve the anomaly on the load.
4. Turn the power switch (SW6) on again.

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High-voltage power supply

The printer contains two high-voltage PCBs mounted in one assembly. Together these PCBs generate the voltage supplied to the following:

- primary charging roller
- developing sleeve
- primary transfer roller
- secondary transfer roller
- ITB cleaning roller
- upper fusing roller

DC voltage or a superimposed AC voltage and DC voltage is applied to the primary charging roller, developing sleeve, and ITB cleaning roller.

Positive or negative DC voltage is applied to the primary transfer roller and secondary transfer roller. Negative DC voltage is applied to the upper fusing roller.

Protection systems

Problems on the load side, such as short-circuits, can cause an excessive flow of current from the DC power supplies or can generate abnormal voltage. When this happens, the excess-current and excess-voltage protection systems automatically shut off output voltage to protect the power supplies.

If the protection systems are activated and the power supply circuit does not output DC voltage, turn the printer off, correct the problem in the faulty load, and then turn the printer on again.

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4 Input/Output (I/O)

Overview

This chapter provides information on cabling and the printer interface.

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Enhanced I/O (EIO) configuration

Both 4500 series and 4550 series printers come equipped with two enhanced input/output (EIO) slots. These slots hold compatible external devices such as the HP JetDirect 600N Print Server. Plugging EIO cards into the slots increases the number of network interfaces available to the printer.

EIO cards can maximize printer performance when you are printing from a network. In addition, they provide the ability to place the printer anywhere on a network. This eliminates the need to attach the printer directly to a server or a workstation and enables you to place the printer closer to your network users.

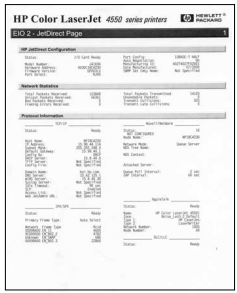
The printer control panel will have an additional menu (EIO Menu) if the printer is configured with EIO cards. (See the chapter on using the printer control panel in the online user guide.)

Note

Installation of cards and network configuration should be performed by a network administrator.

Note

The 4550 series supports the optional 5 GB hard disk drive (included with the HP Color LaserJet 4550HDN printer). The 4500 series does not support an optional hard disk drive.


HP Color LaserJet 4550 series printers

EIO 2 - JetDirect Page

HP JetDirect Configuration

Network Statistics

Protocol Information

JetDirect configuration page

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HP JetDirect print servers

HP JetDirect print servers (network cards) can be installed in one of the printer EIO slots. These cards support multiple network protocols and operating systems. HP JetDirect print servers facilitate network management by allowing you to connect a printer directly to your network at any location. HP JetDirect print servers also support the Simple Network Management Protocol (SNMP), which provides network managers with remote printer management and troubleshooting through HP Web JetAdmin software.

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LocalTalk I/O

The LocalTalk interface enables you to print directly from a standalone Apple Macintosh computer or from a Macintosh computer on a LocalTalk network. For specific information on configuring your computer and printer to print through a LocalTalk interface, refer to the printer's getting started guide and the *HP JetDirect Print Server Software Installation Guide.*

CPU

The 4500 series formatter PCB incorporates a 133MHz RISC processor.

The 4550 series formatter PCB incorporates a 233 MHz RISC processor.

Fast InfraRed Receiver (optional)

The HP Fast InfraRed Receiver enables cableless printing from any IrDA-compliant portable device (such as a laptop computer) to the HP Color LaserJet 4550 printer (when the optional FIR accessory is installed).

The printing connection is maintained by positioning the sending FIR port within operating range. Note that the connection can be blocked by objects such as a hand, paper, direct sunlight, or any bright light shining into either the sending or receiving FIR port.

System requirements

In order to print with the HP Fast InfraRed Receiver, you will need:

- the receiver connected to this printer
- IrDA-compliant portable or other IR-capable host supporting IRLPT or JetSend Communications Technology over IR

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- Microsoft Windows 9x, Windows NT 4.0, Windows 2000 or Mac 8.5 with a LaserWriter 8.6 or higher driver.

Note

Older non-IrDA-compliant portable computers might not be compatible with the HP Fast InfraRed Receiver. If you experience problems when attempting to print with the HP Fast InfraRed Receiver, contact the manufacturer of or dealer for your portable computer to verify compatibility with the IrDA standard.

For more information, see the *HP Fast InfraRed Receiver User Guide* that came with the HP Fast InfraRed Receiver.

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Bidirectional parallel interface

When used to describe a parallel interface, the term *bidirectional* indicates that the printer is able to both receive data from the computer and send data to the computer through the parallel port. An IEEE-1284 compliant parallel cable with the correct pin configuration (see the following table) is necessary to transmit data bidirectionally.

Note

To use the enhanced capabilities of the bidirectional parallel interface such as bidirectional communication between the computer and printer, faster transfer of data, and automatic configuration of printer drivers, your software application must support these capabilities.

When you are using multiple ports, you can adjust automatic I/O switching to maximize performance by using the timeout feature. If data from other ports appears in the middle of your print job, increase the I/O timeout value.

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Parallel cable pin configuration

Use the following table to verify the correct pin configuration.

Signal name	Printer pin #	Computer port #
nSTROBE	15	1
DATA 0	6	2
DATA 1	7	3
DATA 2	8	4
DATA 3	9	5
DATA 4	10	6
DATA 5	11	7
DATA 6	12	8
DATA 7	13	9
nACKNLG	3	10
BUSY	1	11
CALL (PE)	5	12
SELECT	2	13
NAutoFd	17	14
0 Vdc (GND)	19 – 35	18 – 25
nFAULT	4	15
nSe/In	16	17
nINIT	14	16
PERIPHLH	36	
N.C.	18	

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IEEE-1284 compliant parallel cables

HP helped develop the IEEE-1284 standard and is one of the first companies to introduce products that are compliant with it. HP offers the following IEEE-1284 compliant parallel cables. Each is described below.

Part number	Length	Connector type
C2946A	3 meters (10 feet)	Host A to printer C (small) connector
C2947A	10 meters (33 feet)	Host A to printer C (small) connector

Maximum I/O cable lengths

Cable type	Length
Parallel (non-IEEE-1284)	3 meters (10 feet)
Parallel (IEEE-1284) with “C” type connector	10 meters (33 feet)

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Configuring the computer interface

You can verify that the printer is configured properly by printing out a printer configuration page.

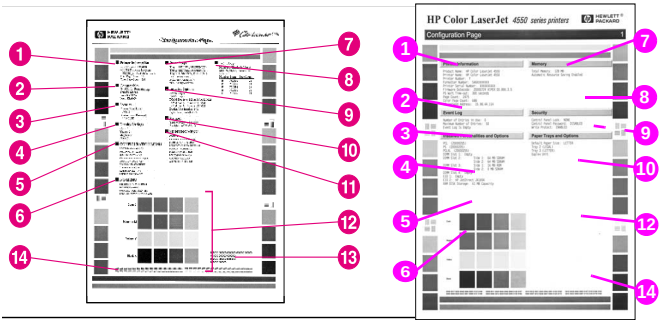
Note

If the printer is configured with EIO cards (for example, an HP JetDirect print server), an additional configuration page will print that provides interface configuration information.

The Color LaserJet 4550 series has several new pages that can be printed to help diagnose issues, including Supplies Status, Event Log, and Usage pages. These pages are printable from the Infromation menu.

Interpreting the printer configuration page

The following sample illustrates a 4500 series printer configuration page (left) and a 4550 series printer configuration page (right).



Printer configuration page

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1 **Printer information**—Lists the printer serial number, PCL/Emulated PostScript firmware revision, total number of pages printed during the life of the printer, and total number of color pages printed during the life of the printer.

2 **Event log**—Lists the last five printer events, including printer jams, service errors, and other printer conditions.

3 **Installed personalities and options**—Lists installed options such as EIO cards, DIMMs, duplex printing accessory, and 500-sheet paper feeder.

4 **I/O menu**—(LaserJet 4500 series only.) Lists the current settings of the I/O menu items.

5 **Configuration menu**—(LaserJet 4500 series only.) Lists the current settings of the configuration menu items.

6 **Printing menu**—(LaserJet 4500 series only.) Lists the current settings of the printing menu items.

7 **Memory**—Shows the total memory installed and the total memory available in the printer. Also lists the memory allocation settings.

8 **Security**—Shows whether the printer control panel is locked or unlocked. Also shows whether the printer control panel password is enabled or disabled.

9 **Paper trays**—Lists the size and type of media currently configured for each input tray. Also lists the current Tray 1 mode, A4/letter override setting, and default size setting.

10 **Density settings**—(LaserJet 4500 series only.) Lists the current density settings.

11 **Printing menu**—(4500 series only) Lists the current settings of the printing menu items.

12 **Color blocks**—The color blocks verify color printing ability of the printer. The color blocks in themiddle of the page are primary colors, and the color blocks surrounding the page are secondary colors. Each color is shown in 100%, 75%, 50%, and 25% fill.

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13 Printer usage information—(4500 series only; 4550 series usage information is on the Usage Page) Shows the number of pages printed for the following items:

Row 1: Paper size

000000	000000	000000	000000	000000	
Custom	Envelope	Legal	Executive/B5	Letter/A4	

Row 2: Fuse modes

000000	000000	000000	000000	000000	
Normal	Heavy	OHT	Gloss	Envelope	

Row 3: Source tray

000000	000000	000000	000000		
Tray 1	Tray 2	Tray 3	Duplex		

Row 4: Language

000000	000000	000000			
PCL pages	PS pages	XL pages			

Row 5: Media types

000000	000000	000000	000000	000000	000000
Plain	Pre-printed	Letterhead	Transparency	Pre-punched	Labels

Row 6: Media types

000000	000000	000000	000000	000000	000000
Bond	Recycled	Color	Card	Gloss	Heavy

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Row 1: Paper size

Note

For rows one to three, the page count is incremented after every 10 pages. Row four is incremented after every end of page. Rows one to four are counted through the engine. Rows five and six are driver requests.

The tray count is incremented based on the tray that is selected by the firmware, not the tray that is selected by the user.

Media size count is incremented based on the media size that is selected by the user. Media type count is incremented based on 1) the media type that is selected by the user when the media is pulled from tray 1; and 2) the media type configured on the tray when media is pulled from Tray 2 or Tray 3.

Fuse mode count is incremented twice for duplexed sheets, once when the front side is fused and once when the back side is fused.

14 **Calibration density settings**—On the bottom row of text, there are four separate blocks of numbers. The first block is for cyan, second for magenta, third for yellow, and the last is for black. Make sure the numbers are not near zero (if so, no calibration was done).

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Note

For rows one to three, the page count is incremented after every ten pages. Row four is incremented after every end of page. Rows one to four are counted through the engine. Rows five and six are driver requests.

The tray count is incremented based on the tray that is selected by the firmware, not the tray that is selected by the user.

Media size count is incremented based on the media size that is selected by the user. Media type count is incremented based on 1) the media type that is selected by the user when the media is pulled from Tray 1; and 2) the media type configured on the tray when media is pulled from Tray 2 or Tray 3.

Fuser mode count is incremented twice for duplexed sheets, once when the front side is fused and once when the back side is fused.

15 **Calibration density settings**—On the bottom row of text, there are four separate blocks of numbers. The first block is for cyan, second for magenta, third for yellow, and the last is for black. Make sure the numbers are not near zero (if so, no calibration was done).

Note

Do not print the configuration page until the printer is ready or calibration will not occur.

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5 Media specifications

Overview

Use media that meet the specifications listed on the following pages. By doing so, you will minimize the incidents of paper jams, prevent premature wear to the printer, and reduce repair costs. Hewlett-Packard recommends testing print media before buying it in large quantities.

Note

For complete paper specifications for all LaserJet printers, see the *HP LaserJet Printer Print Media Guide*.

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Supported media weights and sizes

The table below shows the media types and sizes supported by the printer and the printer accessories. For optimum results, use conventional 75 g/m^2 (20 lb) xerographic paper.

Supported media specifications

Tray	Supported media	Media specifications	Capacity
Tray 1	Paper A4/Letter Legal Executive JIS B5 A5 Custom Minimum Size: 76 by 127 mm (3 by 5 in) Maximum Size: 216 by 356 mm (8.5 by 14)	Single-sided: If less than or equal to 148 mm width: 60 to 176 g/m^2 (16 to 47 lb) If more than or equal to 148 mm width: 60 to 176 g/m^2 (16 to 36 lb) Two-sided: 64 to 105 g/m^2 (17 to 28 lb)	150 sheets of 75 g/m^2 (20 lb) paper
	Transparencies Glossy Paper Letter/A4	0.13 mm (5 mil) 120 g/m^2 (32 lb/80 lb text)	Limit of 50 Limit of 50 sheets
	Envelopes (Tray 1 only) Com10 Monarch C5 DL B5 (JIS)	Maximum weight: 90 g/m^2 (24 lb)	Limit of 10
	Labels (Tray 1 only)		Limit of 50
	Cardstock (Postcards) (Tray 1 only)	Maximum weight: 176 g/m^2 (47 lb) Maximum size: 200 mm by 148 mm (7.87 in by 5.82 in)	Do not load more than the maximum stack height of 15 mm (0.6 in)

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Supported media specifications (continued)

Tray	Supported media	Media specifications	Capacity
Tray 2*	Paper A4/Letter Legal Executive JIS B5 A5 Custom (B5 ISO)**	60 to 105 g/m^2 (16 to 28 lb)	250 sheets of 75 g/m^2 (20 lb) paper
	Transparencies Glossy Paper	0.13 mm (5 mil) 120 g/m^2 (32 lb/80 lb text)	Limit of 50 transparencies Limit of 200 sheets glossy
Tray 3* (optional)	Paper A4/Letter Legal Executive JIS B5 Custom (B5 ISO)**	60 to 105 g/m^2 (16 to 28 lb)	500 sheets of 75 g/m^2 (20 lb) paper
	Transparencies Glossy Paper	0.13 mm (5 mil) 120 g/m^2 (32 lb/80 lb text)	Limit of 50 transparencies Limit of 500 sheets glossy
Duplex printing accessory (optional)	Paper A4/Letter Legal Executive JIS B5	64 to 105 g/m^2 (17 to 28 lb)	

*Trays 2 and 3 do not support the range of custom sizes available in Tray 1.
**Trays 2 and 3 use “custom” size—specifically for B5 ISO.

Note

Use only HP-supported transparencies (HP part number C2934A, letter size; C2936A, A4 size).

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Media requirements

Selecting print media

You can use many types of paper and other print media with the HP Color LaserJet printers. This section provides guidelines and specifications for selecting and using different print media.

For optimum results, use conventional 75 g/m^2 (20 lb) xerographic paper. Verify that the paper is of good quality and is free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, curls, or bent edges. See “Supported media weights and sizes” on page 90.

Before purchasing any media or specialized forms in quantity, verify that your paper supplier obtains and understands the print media requirements specified in the *HP LaserJet Family Print Media Guide*. The guide is available through HP Direct. (See “Services and support resources” in Chapter 11.) You will want to make sure that your paper meets the following specifications:

Electrical surface resistivity	2.0 to 15 by 10^{10} ohms/square inch (conditioned at 23 C and 50% RH)
Electrical volume resistivity	1.2 to 15 by 10^{11} ohms/square inch (conditioned at 23 C and 50% RH)

It is possible that media could meet all of the guidelines in this chapter and still not print satisfactorily. This may be due to abnormal characteristics of the printing environment or to other variables over which Hewlett-Packard has no control (for example, extremes in temperature and humidity).

Hewlett-Packard recommends testing any media before buying it in large quantities.

CAUTION

Using media that does not conform to the specifications listed here or in the *HP LaserJet Family Print Media Guide* can cause problems that require service. This service is not covered by the Hewlett-Packard warranty or service agreements.

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Non-supported media

Use the following guidelines to avoid poor print quality or damage to your printer:

- Do not use paper that is too rough.
- Do not use paper that is embossed or coated unless it is specifically recommended for use in the HP Color LaserJet printers.
- Do not use paper with cutouts or perforations other than standard 3-hole punched paper.
- Do not use multipart forms.
- Do not use paper with irregularities such as tabs or staples.
- Do not use letterhead paper with low temperature dyes or thermography. Preprinted forms or letterhead must use inks that can tolerate temperatures of 190° C (374° F) for 0.1 second.
- Do not use any media that produces hazardous emissions, or that melts, offsets, or discolors when exposed to 190° C (374° F) for 0.1 second.
- Do not use paper that has already been printed on or fed through a photocopier or printer.
- Do not use paper with a watermark if you are printing solid patterns.
- Do not duplex on glossy paper. Doing so will result in paper jams and print quality problems.
- Do not use transparencies that are not specified for use with HP Color LaserJet printers.

Printing on special media

Use these guidelines when printing on special types of media.

For optimum results, use conventional 75 g/m^2 (20 lb) xerographic paper. Verify that the paper is of good quality and is free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, curls, or bent edges.

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Transparencies

Note

Hewlett-Packard recommends using HP Color LaserJet Transparencies with this printer. HP products are designed to work together for optimum printing results.

When printing on transparencies, use these tips to prevent printer malfunctions caused by transparencies:

- Use letter-size and A-4 size for printing.
- Do not send transparencies from Tray 2 to the rear output bin. The toner will be warm and may cause the transparencies to stick together.
- Send transparencies to the top output bin.
- Handle transparencies using the edges. Oils from your fingers can remain on the transparency and can cause print quality problems.
- Use transparencies with the correct resistivity.
- Use transparencies that meet HP specifications for fusing compatibility.
- Use only overhead transparencies recommended for use in this printer. The following table gives the recommended specifications for transparencies.

Printing on transparencies

Description	Specifications
Electrical surface Resistivity	2.0 to 15 by 10 ohms per square inch
Fusing compatibility	Materials must not discolor, melt, offset, or release hazardous emissions when heated to 190° C (374° F) for 0.1 second.
Caliper (thickness)	0.12 mm (0.0048 in) to 0.13 mm (0.0052 in)

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Glossy paper

For optimum results when printing on glossy paper, select the glossy print setting in the printer driver. You can also use the printer control panel to set the media type to GLOSS for the input tray you are using. Because this setting affects all print jobs, it is important to return the printer to its original settings once your job has printed. See the section in the online user guide on configuring input trays.

CAUTION

Do not duplex on glossy paper. Doing so will result in paper jams and print quality problems.

Colored paper

Colored paper should be of the same high quality as white xerographic paper. Pigments used must be able to withstand the printer's fusing temperature of 190° C (374° F) for 0.1 second without deterioration. Do not use paper with a colored coating that was added after the paper was produced.

The printer creates colors by printing patterns of dots, overlaying and varying their spacing to produce various colors. Varying the shade or color of your paper will affect the shades of your printed colors.

Heavy paper

CAUTION

Do not use paper that is heavier than the recommended paper specification for this printer. Doing so can cause misfeeds, paper jams, inferior print quality, and excessive mechanical wear.

Use Tray 1 for paper that is heavier than 105 g/m^2 (28 lb). For optimum results when printing on heavy paper, select the heavy print setting in the printer driver. You can also use the printer control panel to set the media type to HEAVY for the input tray you are using. Because the setting adjustment affects all print jobs, it is important to return the printer to its original settings once your job has printed.

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Envelopes

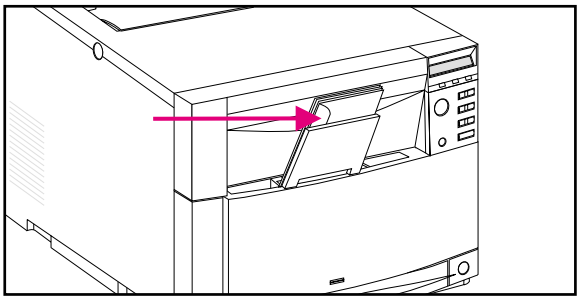
Envelopes can only be printed from Tray 1. For information on loading envelopes, see the section in the online user guide on loading envelopes into Tray 1.

Adhering to the following guidelines will help ensure proper printing of envelopes and help prevent printer jams:

- Do not load more than 10 envelopes into Tray 1.
- The weight rating of envelopes should not exceed 90 g/m^2 (24 lb).
- Envelopes should be flat.
- Envelopes must not be wrinkled, nicked, or otherwise damaged.
- Envelopes with peel-off adhesive strips must use adhesives that can withstand the heat and pressures of the printer's fusing process.
- Envelopes should be loaded with the flaps facing away from the printer and toward the left side of the printer.

CAUTION

To prevent severe printer damage, do not use envelopes that have windows, clasps, snaps, or synthetic materials.



Loading envelopes—envelope flaps at left, face down

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Labels

Note

To print labels, Hewlett-Packard recommends configuring Tray 1 as a cassette and setting the tray's media type to LABELS in the printer control panel.

When printing labels, use the following guidelines:

- Verify that the label's adhesive material can tolerate temperatures of 190° C (374° F) for 0.1 second.
- Verify that adhesive material is not exposed between the labels. Exposed areas can cause labels to peel off during printing, which can cause printer jams. Exposed adhesive can also cause damage to printer components.
- Do not re-feed a sheet of labels.
- Verify that labels lie flat.
- Do not use labels that are wrinkled, bubbled, or otherwise damaged.

Preprinted forms and letterhead

Observe the following guidelines for best results with preprinted forms and letterhead:

- Forms and letterhead must be printed with heat-resistant inks that will not melt, vaporize, or release hazardous emissions when subjected to the printer's fusing temperature of approximately 190° C (374° F) for 0.1 second.
- Inks must be non-flammable and should not adversely affect any printer rollers.
- Forms and letterhead should be sealed in a moisture-proof wrapping to prevent changes during storage.
- Before you load preprinted paper such as forms and letterhead, verify that the ink on the paper is dry. During the fusing process, wet ink can come off the preprinted paper.

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Recycled paper

This printer supports the use of recycled paper. Recycled paper must meet the same specifications as standard paper (refer to the *HP LaserJet Family Print Media Guide*). The guide is available through HP Direct. See Appendix D in the online user guide for ordering information. Hewlett-Packard recommends that recycled paper contain no more than 5 percent groundwood.

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General tips

Paper curl

Paper curl results from both the heating process used to bond the print image (toner) to the paper and from the path that the paper must negotiate through the printer.

Take the following actions to help reduce paper curl:

1. Turn the paper over in the input tray. Some paper packages (reams) have an arrow indicating the preferred printing side. Experiment to determine which orientation yields the least curl.
2. Try a different output paper path (if available for your printer). Using the face-up output path may yield more acceptable results than the standard face-down output bin.
3. Protect the paper from adverse environmental conditions prior to use. Paper designed for laser printing has an initial moisture content of 4 to 6 percent, which is maintained as long as it is stored properly. Once the paper has been removed from its packaging it will dry out or absorb additional moisture, depending on the environment. Excess moisture in the paper will increase the amount of curl.
4. Try a different type or brand of paper. Not all paper is designed for laser printing.
5. Heavy toner coverage can result in more curl.

Much of the paper curl that is induced by the laser printer fusing process will tend to relax within the first 24 hours following printing. However, the curl on the leading edge of the page may remain longer because the leading edge tends to remain in contact with the fusing roller for longer periods.

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6 Toner cartridge information

Overview

This chapter provides information on toner cartridges and their use. Hewlett-Packard recommends using HP toner cartridges, which are designed specifically to enhance the output from the HP LaserJet family of printers.

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Approximate replacement intervals for consumable items

You can identify consumable items by their labeling and their blue plastic handles. For instructions on installing consumables, see the installation guides supplied with each consumable item.

The following table lists the replacement intervals for printer consumable items and the control panel messages that prompt you when it is time to replace each item.

Approximate consumable replacement time

Consumable	Printer message	Page count	Approximate time period
Black (K) toner cartridge	TONER K LOW or TONER K OUT	9,000 pages[1]	4.5 months
Cyan (C) toner cartridge	TONER C LOW or TONER C OUT	6,000 pages[1]	3 months
Magenta (M) toner cartridge	TONER M LOW or TONER M OUT	6,000 pages[1]	3 months
Yellow (Y) toner cartridge	TONER Y LOW or TONER Y OUT	6,000 pages[1]	3 months
Drum kit	DRUM KIT LOW REPLACE KIT or DRUM KIT LOW ORDER KIT or DRUM KIT OUT REPLACE DRUM KIT	25,000 black-and-white-only pages, or 6,250 color pages.	12.5 months for black-and-white-only pages, or 3 months for color pages.

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Approximate consumable replacement time (continued)

Consumable	Printer message	Page count	Approximate time period
Transfer kit	TRANSFER KIT LOW REPLACE KIT or TRANSFER KIT LOW ORDER KIT or TRANSFER KIT OUT REPLACE KIT	100,000 black-and-white-only pages, or 25,000 color pages.	50 months for black-and-white-only pages, or 12.5 months for color pages.
Fuser kit	FUSER KIT LOW REPLACE KIT or FUSER KIT LOW ORDER KIT or FUSER KIT OUT REPLACE KIT	100,000 black-and-white-only pages, or 50,000 color pages.	50 months for black-and-white-only pages, or 25 months for color pages.

1 The approximate average A4/letter-size page count is based on 5 percent coverage of individual toner colors. Page counts are only estimations; usage conditions and print patterns can cause results to vary.
2 Approximate lives are based on 2,000 pages per month.

CAUTION

Hewlett-Packard recommends the use of HP products in this printer. Use of non-HP products may cause problems requiring service that is not covered by the Hewlett-Packard warranty or service agreements.

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Potential toner cartridge issues

Banding

When printing with a laser printer, the toner is applied across the page in horizontal strips. The page is moved through the printer and toner is continually applied. When printing text- or black-image pages, a large amount of toner is deposited on the page. As the amount of toner deposited on the page decreases, slight speed variations become more apparent. As the resolution (dots per inch) and the speed (pages per minute) increase, a variation in pattern intensity may appear on the page as lines or bands.

The bands are more visible in certain grayscale patterns. High speed printers that are capable of printing high resolution grayscale patterns are more likely to display the pattern variations. Changing the grayscale pattern or reducing the resolution may significantly reduce the amount of banding that occurs.

Character voids

Small gaps or voids may appear in some of the characters when printing on media other than standard photocopier paper. These “character voids” occur because some print media does not accept the transfer of toner as well as others.

To minimize the occurrence of character voids, avoid media with a rough finish. Use media that is within the Hewlett-Packard paper specifications listed in the user guide, service manual, or *HP LaserJet Family Print Media Guide*. If the finish is too rough, the surface will consist of large inconsistencies. If the finish is too smooth, toner will not adhere well. Adjusting the print density may affect the severity of character voids.

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Toner cracking

When the paper is folded and the crease aligns with a line of text, it is possible with certain types of paper for the text to break along the line, giving the appearance of a white line through the text. Papers that do not meet the smoothness (100-250 Sheffield, 100-500 Bendtsen) or wax pick (>11 Dennison) are likely to exhibit this effect more than others.

Toner in the HP LaserJet printers is composed of minute particles of pigmented plastic material (styrene) and iron oxide. When the toner is subjected to the fusing temperature, these individual iron-impregnated plastic particles become part of a larger plastic image on the page. When the printed page is subsequently folded, the plastic image must also give, in some fashion, to accommodate the fold. If the print image has been well-set into the paper, this resulting break in the plastic will not be apparent. However, if the toner is unable to adequately penetrate the paper fibers or if, in the process of folding the paper, the paper fibers behind the toner break away from the page itself, the result will be a “white line” through the image. There are several ways to minimize this effect:

- Ensure that the paper being used meets all of the specifications provided in the *HP LaserJet Printer Family Print Media Guide*; in particular the smoothness and wax pick.
- For the reasons listed earlier, a narrower character-stroke width might also help.

In electrophotographic (laser) printing, using paper that has a laid finish often causes problems. The surface roughness of the paper is often responsible for the problems.

Paper that is stiffer than electrophotographic paper also causes problems. Stiff papers do not fold well. When stiff paper is folded and a toner image is applied to the paper’s surface, the problems are even worse.

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Transfer of toner image (post-image transfer)

After printing a document on a HP LaserJet printer, folding it, and sending it through the mail, you might observe that a portion of the print image was transferred to opposing surfaces of the folded document.

The laser printing process uses a pigmented plastic powder (toner) to form a print image that is first transferred to a sheet of paper (or other print medium) and then melted (fused) onto the surface of the paper to form a permanent image. Though paper is usually thought of as being “soft,” it is actually quite abrasive. When the printed page is folded, movement under pressure between a paper surface and the toner image may cause the paper to abrade (scratch) the toner, causing a transfer of the toner material onto the opposing surface of the paper. This can be demonstrated by rubbing a print image against (or into) a clean sheet of paper.

Some machinery, such as that used by the U.S. Postal Service to sort mail, can apply the necessary pressure and agitation to cause this toner image transfer phenomenon.

To minimize this effect:

- Minimize the amount (or height) of toner used to produce the print image.
- Use a paper that is less abrasive.
- Ensure optimal fusing of the toner (print) image to the paper.

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HP LaserJet printers have been designed for optimum results with xerographic (laser) bond papers such as HP Multipurpose paper. The properties of this type of paper (for example, surface roughness, composition, and moisture content) are such that the other causes of potential toner transfer are minimized. Photocopy papers are typically less abrasive than other types of paper (such as writing bond) and are also formulated to ensure optimal fusing of the toner image. Using other types of paper will generally yield less than optimal results in laser printers. For help in selecting paper suitable for use in the HP LaserJet printers, refer to the *HP LaserJet Printer Family Print Media Guide*. This guide can be ordered by calling HP Parts Direct at (800) 227-8164 in the U.S., or HP Distribution at (970) 339-7009.

Because of the way that laser printing is accomplished, currently there is no way to entirely eliminate the possibility of toner transfer. However, using these techniques should yield results that are more satisfactory and will often reduce the problem to imperceptible levels.

Gray background on envelopes

Poor print quality is normally the result of using envelopes that are of the incorrect weight or finish. The paper used to construct the envelope may be embossed; or may be too heavy, too rough or too slick; or may be made in such a way that it is incompatible with the high temperatures encountered in toner fusing. The result is that the toner does not adhere well to the surface. Also, on heavier envelopes, a gray background may appear on the front (or print side) of the envelope.

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HP Planet Partners

The U. S., Canada, Europe, and Australia now have HP toner cartridge recycling programs. The used toner cartridge should be placed in the wrapper and box that held the new cartridge and sent back for recycling.

HP Planet Partners

U.S.	A brochure explaining the recycling program in the U.S., part number 5091-1325EUS, can be ordered. The customer returns used toner cartridges via UPS at no cost to the customer using shipping labels included in the brochure. The toner cartridges can be shipped one at a time or in volume shipments. Some of the parts are recycled to make new cartridges. Other parts are melted for re-use as raw materials. If the customer has any questions, and to receive the free recycling brochure, refer them to the Customer Information Center at (800) 752-0900.
AUSTRALIA	Australian customers can send their toner cartridges to their local HP dealer. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.
EUROPE	The recycling program in Europe currently includes these countries: Germany, Switzerland, Austria, United Kingdom, the Netherlands, and Sweden. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

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HP Planet Partners (continued)

CANADA	Canada uses Federal Express for their recycling program. At least eight but no more than 40 Toner Cartridges can be shipped at one time. Shipments of less than eight cartridges are at the shipper's expense. Call Federal Express at (800) GoFedEx; (800) 463-3339 to arrange for free pickup of the bundled cartridges. Fill out a Federal Express Waybill or obtain a preprinted one from your dealer. In Alberta, B.C., Manitoba, NWT, Saskatchewan, and the Yukon, send the bundles to: Hewlett-Packard Toner Cartridge Recycling Program 6551 Westminister Hwy, Unit 160 Richmond, B.C. V7C 4V4 Acct. No.: 1246-1740-5 In the Atlantic provinces, Ontario, and Quebec send the bundles to: Hewlett-Packard Toner Cartridge Recycling Program 6600 Goreway Drive, Unit C Mississauga, Ontario L4V 1S6 Acct. No.: 1246-1740-5 For more information, call: Canada wide: (800) 387-3867 Dept. 129; Toronto: (800) 678-9430 Ext. 4981

Note

Recycling information is included in the toner cartridge package.

For additional information about HP corporate-wide, environmental policies, practices, and awards, visit **www.hp.com**.

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Toner cartridge refill statement

Hewlett-Packard toner cartridges have been designed to maximize the reliability of the HP LaserJet printer by including all of the components that need frequent replacement or adjustment within the cartridge. While we recognize that all parts of this critical printer mechanism will not wear consistently, the HP toner cartridge has been designed to optimize the exceptional print quality that is synonymous with the HP LaserJet printer name. While Hewlett-Packard does not prohibit the use of refilled toner cartridges during the warranty period or under a maintenance contract, we also do not recommend their use for the following reasons:

1. The HP LaserJet toner cartridge is not designed to be refilled or remanufactured.
2. Hewlett-Packard has no control or process to ensure that a refilled toner cartridge will function at the high level of reliability of a new HP LaserJet toner cartridge. Hewlett-Packard also cannot predict what the long-term effect on the printer's reliability could be from using different toner formulations found in refilled cartridges. Because the HP LaserJet printer has the highest reliability reputation in the industry, we are concerned about any usage that might affect this reputation.
3. Hewlett-Packard has no control over the actual print quality of a refilled toner cartridge. The print quality of the HP LaserJet toner cartridge directly influences the customer's perception of the HP LaserJet printer itself. The high print quality of the HP LaserJet printer is one of the primary reasons for the success of the product and we are keenly interested in maintaining that image.

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The entire family of HP LaserJet printers is covered under a standard one-year warranty from the date of purchase. Hewlett-Packard offers optional maintenance contracts after the one-year warranty expires. The use of refilled toner cartridges alone does not affect either the warranty or any maintenance contract purchased from HP. **However, if a HP LaserJet printer failure or damage is found to be directly attributed to the use of a refilled toner cartridge, the repair will not be covered under the warranty or by the maintenance contract**. Rather, standard time and material charges will be applied to service the printer for that particular failure or damage.

Hewlett-Packard is constantly striving to provide the highest quality printer products possible. The HP LaserJet printer family was designed for optimum output performance when the printing mechanism is periodically replaced with a new HP toner cartridge. The HP toner cartridge is designed specifically to enhance the output from the HP family of printers. We know that the highest quality print results will be obtained when new HP toner cartridges are used with HP LaserJet printers.

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7 Printer options and consumables

Overview

The following tables list the products, product numbers, product descriptions, and service part numbers for each printer. Parts can be ordered through HP Parts Direct Ordering at (800) 227-8164 (U.S. only). For additional product support, see the inside back cover of this guide.

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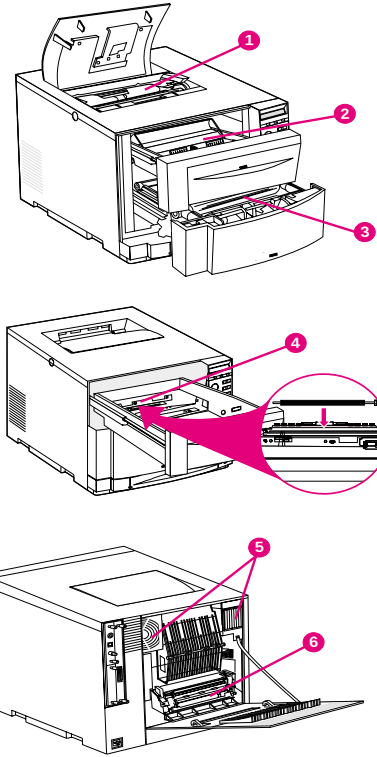
Identifying consumables

The following illustrations show the location of the consumables.



Consumable locations *

1	Toner cartridges	4	Transfer roller
2	Imaging drum cartridge	5	Air filters
3	Intermediate transfer belt	6	Fuser

* See “Approximate replacement intervals for consumable items” on page 102.

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Printer options and replaceable parts

Printer options and replaceable parts

Product	Product number	Product description	4500 part number	4550 part number
Memory 100-pin	C4140A	4 MB SDRAM DIMM	C4140-67901	
	C4141A	8 MB SDRAM DIMM	C4141-67901	
	C4142A	16 MB SDRAM DIMM	C4142-67901	
	C4143A	32 MB SDRAM DIMM	C4143-67901	
	C3913A	64 MB SDRAM DIMM	C3913-67901	
Memory 168-pin	C7848A	64 MB SDRAM DIMM		C7848-60001
	C7850A	128 MB SDRAM DIMM		C7850-60001
Fonts	N/A	Greek (1 MB)	5062-4667	5062-4667
	N/A	Hebrew (1 MB)	5062-4668	5062-4668
	N/A	Cyrillic (1 MB)	5062-4669	5062-4669
	N/A	Arabic (1 MB)	5062-4670	5062-4670
	C4292A (CAS)	Traditional Chinese (8 MB)	N/A	N/A
	C4293A (CAS)	Simplified Chinese (8 MB)	N/A	N/A
	YS-90210	Japanese (8 MB)	N/A	N/A

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Printer options and replaceable parts (continued)

Product	Product number	Product description	4500 part number	4550 part number
Network connectivity	J3110A	HP JetDirect 600N for ethernet (10Base-T [RJ-45])	J3110-69001	J3110-69001
	J3111A	HP JetDirect 600N for ethernet (10Base-T [RJ-45] and 10Base-2 [BNC]) and LocalTalk (DIN-8)	J3111-69001	J3111-69001
	J3112A	HP JetDirect 600N for Token Ring (DB9, RJ-45)	J3112-69001	J3112-69001
	J3113A	HP JetDirect 600N for Fast Ethernet (10/100 Base-TX [RJ-45])	J3113-69001	J3113-69001
	J4169A	HP JetDirect 610N for Fast Ethernet (10/100 Base-TX [RJ-45])	J4169-69001	J4169-69001

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Printer options and replaceable parts (continued)

Product	Product number	Product description	4500 part number	4550 part number
Options	C4082A	500-sheet input tray	C4082-67901	C4082-67901
	C4083A	Duplex unit (two-sided printing)	C4083-67901	C4083-67901
	C4235A	HP Color LaserJet 4500/4550 cabinet	N/A	N/A
	J6054A	5 GB Hard Disk (4550 series only)	N/A	N/A
	J4103A	Fast Infrared Pod (4550 series only)	N/A	N/A
	C4286A	Flash DIMM (4550 series only)	N/A	N/A
Toner supplies	C4191A	Black	R94-4005-410CN	R94-4005-410CN
	C4192A	Cyan	R94-4004-410CN	R94-4004-410CN
	C4193A	Magenta	R94-4003-410CN	R94-4003-410CN
	C4194A	Yellow	R94-4002-410CN	R94-4002-410CN
	C4191A	Black (Europe only)	R94-4005-510CN	R94-4005-510CN
	C4192A	Cyan (Europe only)	R94-4004-510CN	R94-4004-510CN
	C4193A	Magenta (Europe only)	R94-4003-510CN	R94-4003-510CN
	C4194A	Yellow (Europe only)	R94-4002-510CN	R94-4002-510CN

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Printer options and replaceable parts (continued)

Product	Product number	Product description	4500 part number	4550 part number
Consumables	C4195A	Drum kit	R94-4001-410CN	R94-4001-410CN
	C4196A	Transfer kit	R96-5009-000CN	R96-5009-000CN
	C4197A	Fuser kit (110V)	R96-5007-000CN	R96-5007-000CN
	C4198A	Fuser kit (220V)	R96-5008-000CN	R96-5008-000CN
Panel overlays	N/A	English	C4084-40001	C4084-40001
	N/A	German	C4084-40005	C4084-40005
	N/A	French	C4084-40003	C4084-40003
	N/A	Spanish	C4084-40006	C4084-40006
	N/A	Italian	C4084-40004	C4084-40004
	N/A	Korean	C4084-40015	C4084-40015
	N/A	Simplified Chinese	C4084-40018	C4084-40018
	N/A	Traditional Chinese	C4084-40014	C4084-40014
	N/A	Swedish	C4084-40011	C4084-40011
	N/A	Dutch	C4084-40007	C4084-40007
	N/A	Finnish	C4084-40009	C4084-40009
	N/A	Russian	C4084-40016	C4084-40016
	N/A	Danish	C4084-40008	C4084-40008
	N/A	Norwegian	C4084-40010	C4084-40010
	N/A	Portuguese	C4084-40012	C4084-40012
	N/A	Czech	C4084-40017	C4084-40017
	N/A	Polish	C4084-40013	C4084-40013
	N/A	Japanese	C4084-40020	C4084-40020

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8 Printer parts

Overview

This chapter provides the part numbers and descriptions of the most commonly used assemblies and subassemblies in the HP LaserJet color printers. The shaded numbers in the tables refer to the location of the part in the printer, as shown in the corresponding illustrations.

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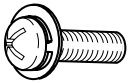
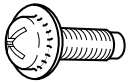
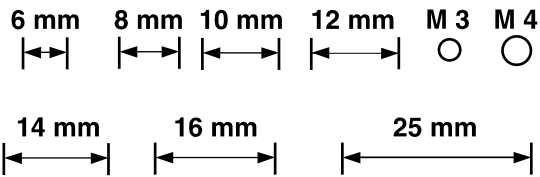
Common fasteners

Illustration	Description	Size	Uses
	Screw, machine w/washer	M3X6 M3X10 M3X12 M3X14	To hold plastic to metal example: the skins
	Screw, self-tapping	M4X8 M4X10	To hold plastic to plastic example: control panel
	Screw, trus head	M3X4 M3X6 M3X8	Sheet metal to sheet metal example: formatter pan
	Retaining ring (e-type)		To hold gears into place



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Parts lists and illustrations

The following illustrations and their respective parts tables list the field replaceable units (FRU) for this printer. Each table includes the name of the part (description), part number, quantity, and reference number pointing to the part and location in the illustration.

See page 148 for a complete list of printer parts (sorted alphabetically by name with part numbers).

Determining the printer version

Two versions of the HP Color LaserJet 4500 series printers are available. To accurately perform removal and replacement procedures or determine the correct part for reordering, you will need to know the version of the printer that is being serviced. To identify the printer, check the serial number, which is located at the rear of the printer. All printers will have US or JP in the first two positions of the serial number (e.g., **US**BB123456). Newer versions of the HP Color LaserJet 4500 printers will have an “H” or higher letter in the third position (e.g. US**H**B123456). If the letter in the third position in the serial number is “B”, “C”,”D”, or “F”, then you have an older version of the HP Color LaserJet 4500 printer.

The 4550 series printer is similar to the newer version of the 4500 printer, but does contain some new service parts.

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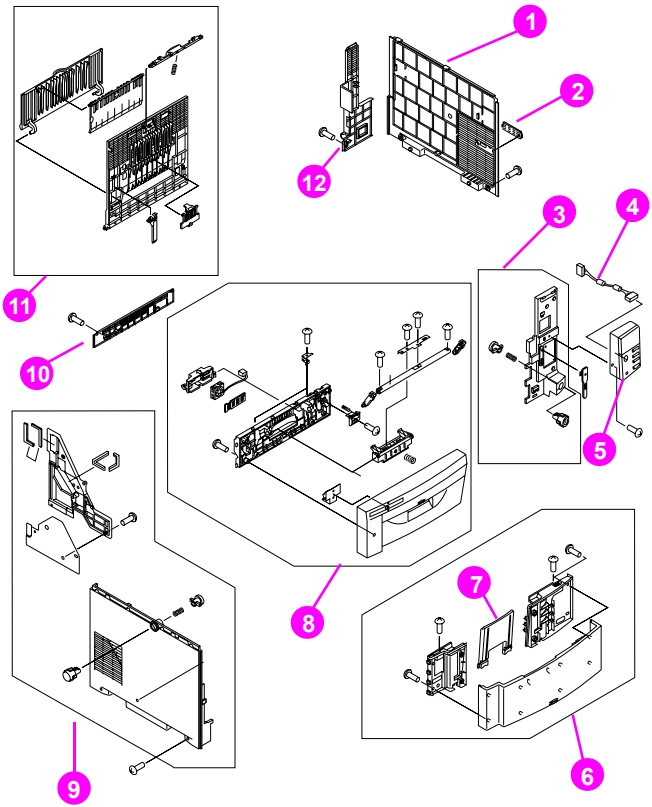
Parts for the HP LaserJet 4500 series



External covers, panels, etc.

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Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Cover, right side	1	RB2-1203-000CN	RB2-1203-000CN	RB2-1203-000CN
2	Cover, connector	1	RB2-1224-000CN	RB2-1224-000CN	RB2-1224-000CN
3	Cover, right front	1	RG5-3310-000CN	RG5-3310-000CN	RG5-3310-000CN
4	Cable, control panel	1	RG5-3802-000CN	RG5-5195-000CN	RG5-5195-000CN
5	Control panel assembly	1	RG5-5200-000CN	RG5-5200-000CN	RG5-5200-000CN
6	Cover, ITB drawer	1	RG5-3320-000CN	RG5-3320-000CN	RG5-3320-000CN
7	Tray, extension	1	RB2-1215-000CN	RB2-1215-000CN	RB2-1215-000CN
8	Cover, drum drawer	1	RG5-5232-000CN	RG5-5152-000CN	RG5-5152-000CN
9	Cover, left side	1	RG5-3313-000CN	RG5-5151-000CN	RG5-5151-000CN
10	Cover, lower rear	1	RB2-1206-000CN	RB2-1206-000CN	RB2-1206-000CN
11	Door, rear access	1	RG5-3325-040CN	RG5-3325-040CN	RG5-3325-040CN
12	Cover, rear	1	RB2-1205-000CN	RB2-1205-000CN	RB2-1205-000CN

Note

Early CLJ4500 printers (serial numbers xxGxxxxxxx and below) have two versions of the drum drawer cover and the upper (drum) drawer

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assembly. If the drum drawer cover requires replacement, first determine whether you have the original version of the drum drawer by locating a bar code label with a part number of RG5-3315 on the inside of the drum drawer cover, just to the right of the fan cover. If you have the original version of the drum drawer, order kit part number **RG5-5230-000CN** to obtain the newer version of the drum drawer assembly, drum drawer cover, plus additional hardware required to complete the update. If the newer version of the drum drawer is already installed, simply order the replacement drum drawer cover (RG5-5232-000CN).

CAUTION

Two versions of the HP Color LaserJet 4500 series printers are available. The 4550 series printer is similar to the newer version of the 4500 printer, but does contain some new service parts. Before ordering parts, you will need to identify which printer version you are servicing. For more information, see page 121.

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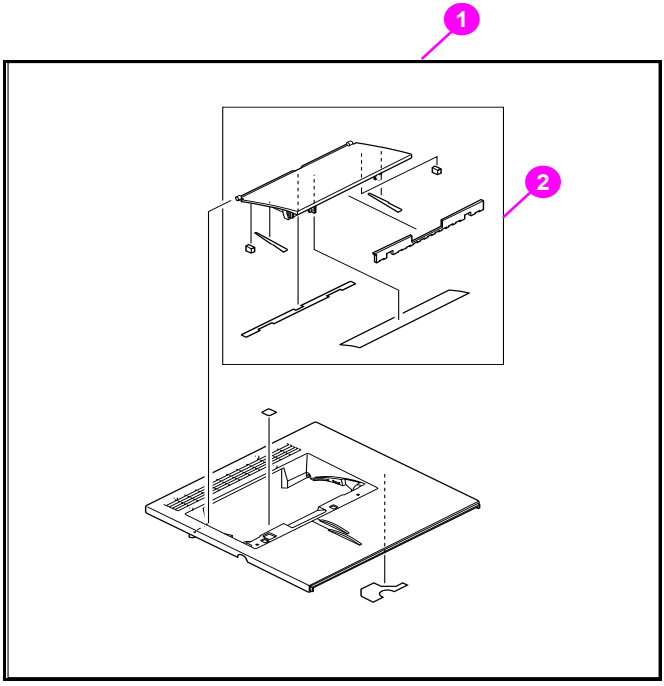

Top cover assembly

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Cover, top	1	RG5-3300-000CN	RG5-5150-000CN	RG5-5150-000CN
2	Cover, toner access	1	RF5-2076-000CN	RF5-3137-000CN	RF5-3137-000CN

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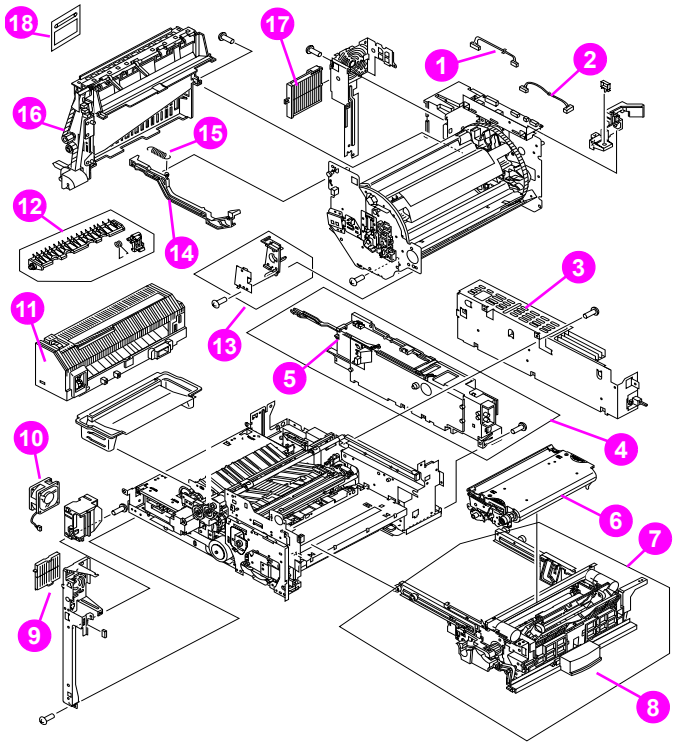

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Internal components (1 of 3)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Cable, fan	1	RG5-3887-000CN	N/A	N/A
2	Cable, developer	1	RG5-3783-000CN	RG5-5187-000CN	RG5-5187-000CN
3	Power supply, 110V	1	RH3-2189-000CN	RH3-2189-000CN	RH3-2189-000CN
3	Power supply, 220V	1	RH3-2190-000CN	RH3-2190-000CN	RH3-2190-000CN
4	High-voltage power supply	1	RG5-3285-000CN	RG5-5165-000CN	RG5-5165-000CN
5	Strap, cover support	1	RB2-1556-000CN	RB2-1556-000CN	RB2-1556-000CN
6	ITB assembly	1	RG5-5173-060CN	RG5-5173-060CN	RG5-5173-060CN
7	ITB drawer assembly	1	RG5-5120-000CN	RG5-5120-000CN	RG5-5120-000CN
8	Handle, ITB drawer	1	RB2-1361-000CN	RB2-1361-000CN	RB2-1361-000CN
9	Filter, air (small)	1	RB2-1283-000CN	RB2-1283-000CN	RB2-1283-000CN
10	Fan, small	1	RH7-1407-000CN	RH7-1407-000CN	RH7-1407-000CN
11	Fuser, 110V	1	RG5-5154-050CN C4084-69002*	RG5-5154-050CN C4084-69002*	RG5-5154-050CN C4084-69002*

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Internal components (1 of 3) (continued)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
11	Fuser, 220V	1	RG5-3251-000CN C4084-69003*	RG5-3251-000CN C4084-69003*	RG5-5155-050CN C4084-69003*
12	Kit, Fuser Deflector	1	C4084-67906	C4084-67906	C4084-67906
13	Drum bushing assembly	1	RG5-5169-000CN	RG5-5169-000CN	RG5-5169-000CN
14	Rod, delivery	1	RB2-1284-000CN	RB2-1284-000CN	RB2-1284-000CN
15	Spring, tension	1	RS5-2754-000CN	RS5-2754-000CN	RS5-2754-000CN
16	Face-down delivery assembly	1	RG5-5135-000CN	RG5-5135-000CN	RG5-5135-000CN
17	Filter, air (large)	1	RB2-1282-000CN	RB2-1282-000CN	RB2-1282-000CN
18	Flapper guide assembly	1	RG5-5251-000CN	RG5-5251-000CN	RG5-5251-000CN

*These parts require exchange

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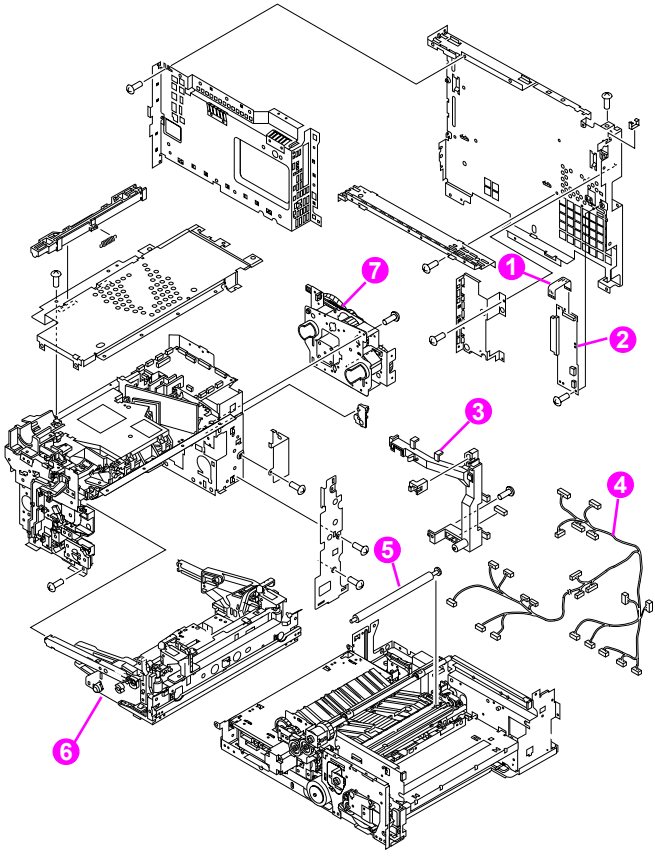

Internal components (2 of 3

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Internal components (2 of 3)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Cable, video interface	1	RH2-5335-000CN	RH2-5335-000CN	RH2-5335-000CN
2	Interconnect PCB	1	RG5-3808-000CN	RG5-3808-000CN	RG5-3808-000CN
3	Guide, cable	1	RB2-1277-000CN	RB2-1277-000CN	RB2-1277-000CN
4	Main cable	1	RG5-3781-000CN	RG5-5186-000CN	RG5-5186-000CN
5	Roller, transfer	1	RF5-2112-000CN	RF5-2112-000CN	RF5-2112-000CN
6	Drum drawer assembly	1	RG5-5230-000CN	RG5-5142-050CN	RG5-5142-050CN
7	Drum drive assembly	1	RG5-5206-000CN	RG5-5206-000CN	RG5-5206-000CN

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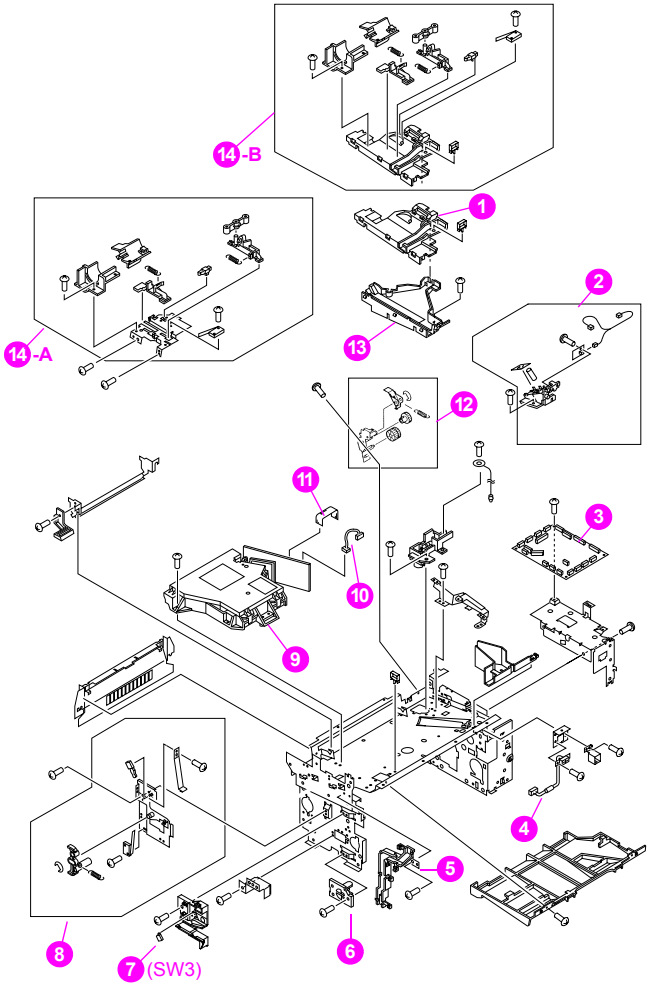

Internal components (3 of 3)

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Internal components (3 of 3)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Guide, drum drawer cable	1	RB2-1457-000CN	(included in 14B)	(included in 14B)
2	Sensor, waste toner (PS13)	1	RG5-3292-000CN	RG5-3292-000CN	RG5-3292-000CN
3	DC controller PCB	1	RG5-3809-000CN	RG5-5254-000CN	RG5-5254-000CN
4	Cable, fan	1	RG5-4650-000CN	RG5-4650-000CN	RG5-4650-000CN
5	Cover, cable	1	RB2-1180-000CN	RB2-1180-000CN	RB2-1180-000CN
6	Bushing, ITB left	1	RB2-1158-000CN	RB2-5185-000CN	RB2-5185-000CN
7	Microswitch	1	WC2-5330-000CN	WC2-5330-000CN	WC2-5330-000CN
8	Drawer switch assembly	1	RG5-3296-030CN	RG5-3296-030CN	RG5-3296-030CN
9	Laser/scanner assembly	1	RG5-5175-000CN	RG5-5175-000CN	RG5-5175-000CN
10	Cable, laser	1	RG5-3782-000CN	RG5-3782-000CN	RG5-3782-000CN
11	Cable, laser (flat)	1	RH2-5400-000CN	RH2-5400-000CN	RH2-5400-000CN
12	Carousel brake assembly	1	RG5-3309-000CN	RG5-5163-000CN	RG5-5163-000CN
13	Guide, cable, lower	1	RB2-1456-000CN	RB2-1456-000CN	RB2-1456-000CN
14A/ 14B	Door switch assembly	1	RG5-5170-000CN	RG5-5170-000CN	RG5-5170-000CN

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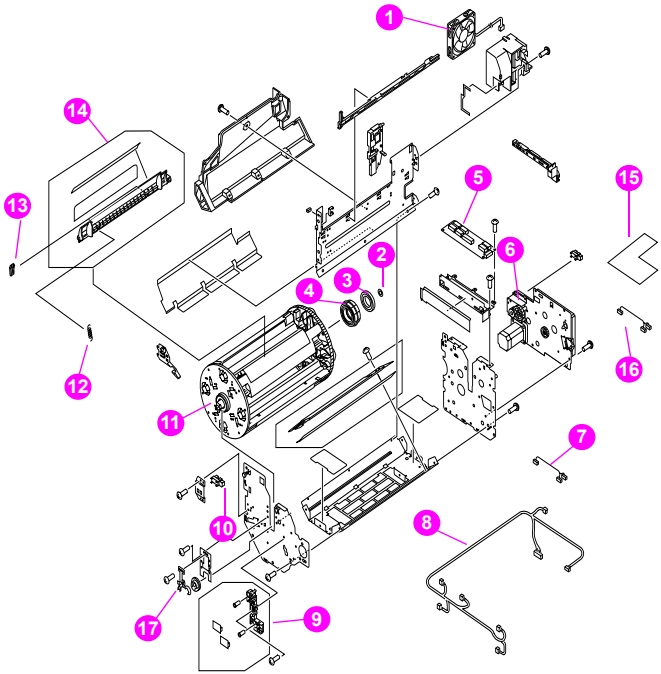

Developing carousel assembly

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Developing carousel assembly

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Fan, large	1	RH7-1346-000CN	RH7-1435-000CN	RH7-1435-000CN
2	Spacer	1	RS5-6210-000CN	RS5-6210-000CN	RS5-6210-000CN
3	Bearing, carousel	1	XG9-0361-000CN	XG9-0361-000CN	XG9-0361-000CN
4	Gear, 125T	1	RS6-0176-000CN	RS6-0176-000CN	RS6-0176-000CN
5	Developing PCB	1	RG5-3811-000CN	RG5-5180-000CN	RG5-5180-000CN
6	Carousel drive assembly	1	RG5-5209-000CN	RG5-5209-000CN	RG5-5209-000CN
7	Cable, fusing connector	1	RG5-3886-000CN	RG5-3886-000CN	RG5-3886-000CN
8	Cable, rotary	1	RG5-3795-000CN	RG5-3795-000CN	RG5-3795-000CN
9	Sensor (PS12), toner level	1	RG5-3355-000CN	RG5-3355-000CN	RG5-3355-000CN
10	Sensor, (PS10) carousel position	1	WG8-5362-000CN	WG8-5362-000CN	WG8-5362-000CN
11	Carousel assembly	1	RG5-5249-000CN	RG5-5249-000CN	RG5-5249-000CN
12	Spring, toner flap	2	RS5-2739-000CN	RS5-2739-000CN	RS5-2739-000CN

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Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
13	Cap, toner flap	2	RB2-0964-000CN	N/A	N/A
14	Kit, carousel flap	1	C4084-67907	C4084-67909	C4084-67909
15	Toner level sensing PCB	1	N/A	N/A	RG5-5247-000CN
16	Toner level sensing cable	1	N/A	N/A	RG5-5444-000CN
17	Grounding spring	1	RB2-0981-000CN	RB2-0981-000CN	RB2-0981-000CN

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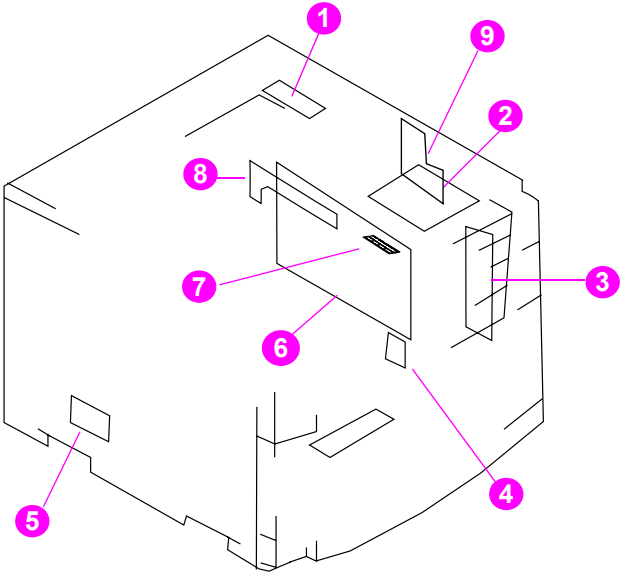

PCB assemblies

PCB assemblies

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Developing PCB	1	RG5-3811-000CN	RG5-5180-000CN	RG5-5180-000CN
2	DC controller PCB	1	RG5-3809-000CN	RG5-5254-000CN	RG5-5254-000CN
3	Interconnect PCB	1	RG5-3808-000CN	RG5-3808-000CN	RG5-3808-000CN

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PCB assemblies (continued)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
4	Paper size sensor PCB	1	RG5-3816-000CN	RG5-3816-000CN	RG5-3816-000CN
5	Paper feed PCB	1	RG5-3810-000CN	RG5-3810-000CN	RG5-3810-000CN
6	Formatter PCB	1	C4084-69001*	C4084-69001*	C4227-69001*
7	Firmware DIMM	1	C4084-60004	C4084-60004	C9130-60001
8	IO card	1	C4081-60001	C4081-60001	C4207-60001
9	Continuous Toner Level Sensor PCB	1	N/A	N/A	C4207-5247-000CN

*These parts require exchange

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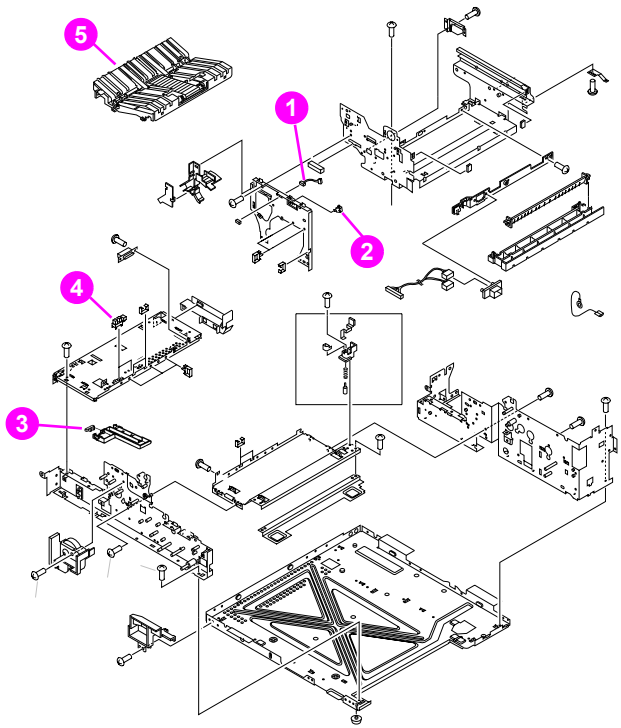

Paper pick-up assembly (1 of 3)

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Paper pick-up assembly (1 of 3)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Cable, ITB switch	1	RG5-4651-000CN	RG5-4651-000CN	RG5-4651-000CN
2	Microswitch, ITB	1	WC2-5330-000CN	WC2-5330-000CN	WC2-5330-000CN
3	Sensor (PS7), delivery paper		WG8-5222-000CN	WG8-5222-000CN	FH7-7313-000CN
4	Sensor (PS6), fusing unit pressure release	1	WG8-5309-000CN	WG8-5309-000CN	WG8-5309-000CN
5	Feeder assembly	1	RG5-3226-000CN	RG5-5117-000CN	RG5-5117-000CN
6	ITB drawer connector	1	VS1-6174-014CN	VS1-6174-014CN	VS1-6174-014CN
7	ITB cable	1	RG5-3786-000CN	RG5-3786-000CN	RG5-3786-000CN

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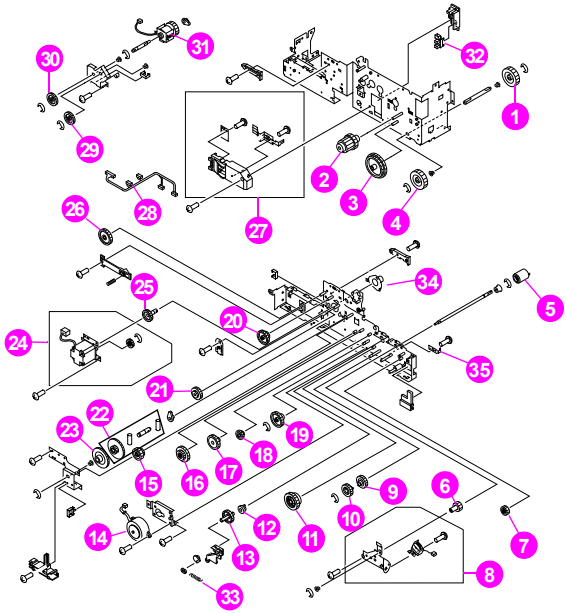

Paper pick-up assembly (2 of 3)

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Paper pick-up assembly (2 of 3)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Gear, 17T	2	RS6-0158-000CN	RS6-0158-000CN	RS6-0158-000CN
2	Gear, 18T/14T	1	RS6-0157-000CN	RS6-0157-000CN	RS6-0157-000CN
3	Gear, 53T/46T	1	RS6-0156-000CN	RS6-0156-000CN	RS6-0156-000CN
4	Gear, 17T	1	RS6-0158-000CN	RS6-0158-000CN	RS6-0158-000CN
5	Roller	1	RF5-2092-000CN	RF5-2092-000CN	RF5-2092-000CN
6	Gear, 18T	1	RS6-0140-000CN	RS6-0140-000CN	RS6-0140-000CN
7	Gear, 19T	1	RS6-0141-000CN	RS6-0141-000CN	RS6-0141-000CN
8	Solenoid, Tray 2 feed (SL2)	1	RG5-3245-000CN	RG5-5119-000CN	RG5-5119-000CN
9	Gear, 27T	1	RS6-0135-000CN	RS6-0135-000CN	RS6-0135-000CN
10	Gear, 27T	1	RS6-0135-000CN	RS6-0135-000CN	RS6-0135-000CN
11	Gear, 30T/16T	1	RS6-0134-000CN	RS6-0134-000CN	RS6-0134-000CN

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Paper pick-up assembly (2 of 3) (continued)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
12	Bushing	2	RS5-1293-000CN	RS5-1293-000CN	RS5-1293-000CN
13	Gear, 31T	1	RS6-0136-000CN	RS6-0136-000CN	RS6-0136-000CN
14	Motor (M2), stepping	1	RH7-1343-000CN	RH7-1343-000CN	RH7-1343-000CN
15	Gear, 47T	1	RS6-0147-000CN	RS6-0147-000CN	RS6-0147-000CN
16	Gear, 24T/37T	1	RS6-0163-000CN	RS6-0163-000CN	RS6-0163-000CN
17	Gear, 35T	1	RS6-0132-000CN	RS6-0132-000CN	RS6-0132-000CN
18	Gear, 20T	1	RS6-0138-000CN	RS6-0138-000CN	RS6-0138-000CN
19	Gear, 37T/14T	1	RS6-0133-000CN	RS6-0133-000CN	RS6-0133-000CN
20	Gear, 34T/15T	1	RS6-0144-000CN	RS6-0144-000CN	RS6-0144-000CN
21	Gear, 29T/17T	1	RS6-0145-000CN	RS6-0145-000CN	RS6-0145-000CN
22	Gear assembly, 18T/52T	1	RF5-2161-000CN	RF5-2161-000CN	RF5-2161-000CN
23	Gear, 52T	1	RS6-0146-000CN	RS6-0146-000CN	RS6-0146-000CN
24	Motor (M1), fusing assembly	1	RG5-3227-000CN	RG5-3227-000CN	RG5-3227-000CN

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Paper pick-up assembly (2 of 3) (continued)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
25	Gear, 26T	1	RS6-0149-000CN	RS6-0149-000CN	RS6-0149-000CN
26	Gear, 37T	1	RS6-0143-000CN	RS6-0143-000CN	RS6-0143-000CN
27	Sensor, paper size	1	RG5-3234-000CN	RG5-3234-000CN	RG5-3234-000CN
28	Cable, paper feed	1	RG5-3785-000CN	RG5-3785-000CN	RG5-3785-000CN
29	Gear, 29T	1	RS6-0150-000CN	RS6-0150-000CN	RS6-0150-000CN
30	Gear, 29T	1	RS6-0150-000CN	RS6-0150-000CN	RS6-0150-000CN
31	Clutch (CL2), electromag-netic	1	RH7-5176-000CN	RH7-5176-000CN	RH7-5176-000CN
32	Sensor (PS8), cassette paper	1	WG8-5309-000CN	WG8-5309-000CN	WG8-5309-000CN
33	Spring, Tray 2 pickup tension	1	RS5-2794-000CN	RS5-2794-000CN	RS5-2794-000CN
34	Cone	1	RS5-1341-000CN	RS5-1341-000CN	RS5-1341-000CN
35	Metal tab, tray 2	1	RB2-0593-000CN	RB2-0593-000CN	RB2-0593-000CN

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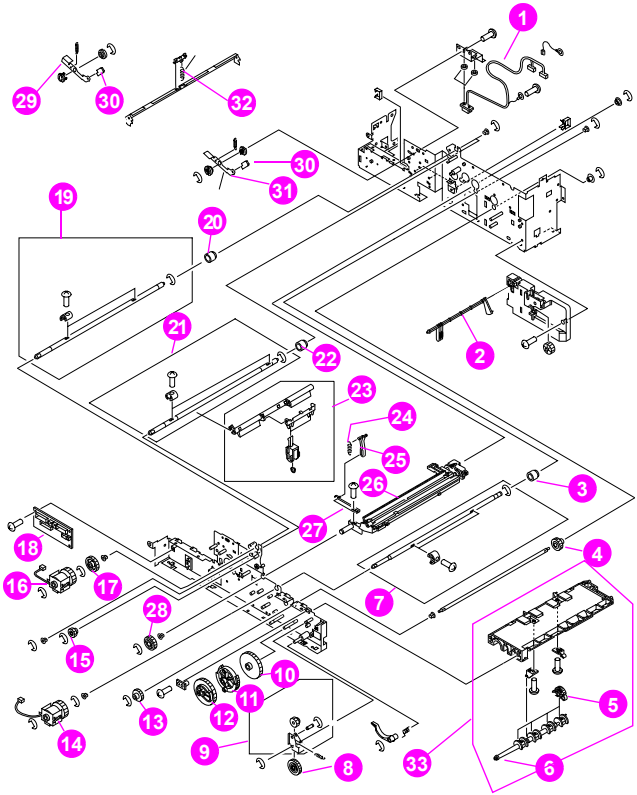

Paper pick-up assembly (3 of 3)

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Paper pick-up assembly (3 of 3)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
1	Cable, fusing/ option	1	RG5-3787-000CN	RG5-3787-000CN	RG5-3787-000CN
2	Lever, sensor	1	RB2-0576-000CN	RB2-0576-000CN	RB2-0576-000CN
3	Clutch, one-way	1	RB2-0572-000CN	RB2-0572-000CN	RB2-0572-000CN
4	Gear, 18T	1	RS6-0139-000CN	RS6-0139-000CN	RS6-0139-000CN
5	Roller, paper pick	4	RB1-8865-000CN	RB1-8865-000CN	RB1-8865-000CN
6	Shaft, paper pick	1	RB2-0545-000CN	RB2-0545-000CN	RB2-0545-000CN
7	Transfer cam assembly	1	RG5-3240-000CN	RG5-5118-000CN	RG5-5118-000CN
8	Gear, 26T/18T	1	RS6-0137-000CN	RS6-0137-000CN	RS6-0137-000CN
9	Gear assembly	1	RG5-3228-000CN	RG5-3228-000CN	RG5-3228-000CN
10	Gear, 53T	1	RS6-0155-000CN	RS6-0155-000CN	RS6-0155-000CN
11	Gear, 39T/31T	1	RS6-0154-000CN	RS6-0154-000CN	RS6-0154-000CN
12	Gear, 49T	1	RS6-0153-000CN	RS6-0153-000CN	RS6-0153-000CN
13	Gear, 18T	1	RS6-0139-000CN	RS6-0139-000CN	RS6-0139-000CN

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Paper pick-up assembly (3 of 3) (continued)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
14	Clutch (CL4), electromagnetic	1	RH7-5180-000CN	RH7-5180-000CN	RH7-5180-000CN
15	Gear, 16T	1	RS6-0151-000CN	RS6-0151-000CN	RS6-0151-000CN
16	Clutch (CL3), electromagnetic	1	RH7-5178-000CN	RH7-5178-000CN	RH7-5178-000CN
17	Gear, 29T	1	RS6-0152-000CN	RS6-0152-000CN	RS6-0152-000CN
18	Paper feed PCB assembly	1	RG5-3810-000CN	RG5-3810-000CN	RG5-3810-000CN
19	ICL cam assembly	1	RG5-3242-000CN	RG5-3242-000CN	RG5-3242-000CN
20	Clutch, one-way	1	RB2-0561-000CN	RB2-0561-000CN	RB2-0561-000CN
21	ITB cam assembly	1	RG5-3241-000CN	RG5-3241-000CN	RG5-3241-000CN
22	Clutch, one-way	1	RB2-0561-000CN	RB2-0561-000CN	RB2-0561-000CN
23	Rowel swing assembly	1	RG5-4696-000CN	RG5-4696-000CN	RG5-4696-000CN
24	Spring tension	1	RS5-2800-000CN	RS5-2800-000CN	RS5-2800-000CN
25	Link rowel	1	RB2-0614-000CN	RB2-0614-000CN	RB2-0614-000CN

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Paper pick-up assembly (3 of 3) (continued)

Ref	Description	Qty	Parts for 4500 s/n xxG and below	Parts for 4500 s/n xxH and above	Parts for 4550
26	Transfer assembly, secondary	1	RG5-3235-000CN	RG5-5115-040CN	RG5-5115-040CN
27	Plate support	1	RF5-3124-000CN	(included in #26)	(included in #26)
28	Gear, 26T	1	RS6-0159-000CN	RS6-0159-000CN	RS6-0159-000CN
29	Plate, left	1	RF5-2094-000CN	RF5-2094-000CN	RF5-2094-000CN
30	Cover, plate	2	RB2-1572-000CN	RB2-1572-000CN	RB2-1572-000CN
31	Plate, right	1	RF5-2095-000CN	RF5-2095-000CN	RF5-2095-000CN
32	Spring	1	RS5-2799-000CN	RS5-2799-000CN	RS5-2799-000CN
33	D roller assembly	1	RG5-3225-040CN	RG5-3225-040CN	RG5-3225-040CN

CAUTION

Two versions of the HP Color LaserJet 4500 series printers are available. The 4550 series printer is similar to the newer version of the 4500 printer, but does contain some new service parts. Before ordering parts, you will need to identify which printer version you are servicing. For more information, see page 121.

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Alphabetical parts list

CAUTION

Two versions of the HP Color LaserJet 4500 series printers are available. The 4550 series printer is similar to the newer version of the 4500 printer, but does contain some new service parts. Before ordering parts, you will need to identify which printer version you are servicing. For more information, see page 121.

Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
500-sheet paper cassette	RG5-3900-000CN	RG5-3900-000CN	RG5-3900-000CN
500-sheet paper feeder	C4082-67901	C4082-67901	C4082-67901
Arm, lifter, left	RB1-9012-000CN	RB1-9012-000CN	RB1-9012-000CN
Arm, lifter, right	RB1-9013-000CN	RB1-9013-000CN	RB1-9013-000CN
Bearing, carousel	XG9-0361-000CN	XG9-0361-000CN	XG9-0361-000CN
Bushing, drum drawer	RB2-1130-000CN	RB2-1130-000CN	RB2-1130-000CN
Bushing, ITB, left	RB2-1158-000CN	RB2-5185-000CN	RB2-5185-000CN
Bushing	RS5-1293-000CN	RS5-1293-000CN	RS5-1293-000CN
Cable, fusing connector	RG5-3886-000CN	RG5-3886-000CN	RG5-3886-000CN
Cable, control panel	RG5-3802-000CN	RG5-5195-000CN	RG5-5195-000CN
Cable, developer	RG5-3783-000CN	RG5-5187-000CN	RG5-5187-000CN
Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
Cable, fan	RG5-3887-000CN	N/A	N/A
Cable, fan	RG5-4650-000CN	RG5-4650-000CN	RG5-4650-000CN
Cable, fusing/option	RG5-3787-000CN	RG5-3787-000CN	RG5-3787-000CN

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Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
Cable, ITB	RG5-3786-000CN	RG5-3786-000CN	RG5-3786-000CN
Cable, ITB switch	RG5-4651-000CN	RG5-4651-000CN	RG5-4651-000CN
Cable, laser	RG5-3782-000CN	RG5-3782-000CN	RG5-3782-000CN
Cable, laser (flat)	RH2-5334-000CN	RH2-5334-000CN	RH2-5334-000CN
Cable, main	RG5-3781-000CN	RG5-5186-000CN	RG5-5186-000CN
Cable, paper feed	RG5-3785-000CN	RG5-3785-000CN	RG5-3785-000CN
Cable, rotary	RG5-3795-000CN	RG5-3795-000CN	RG5-3795-000CN
Cable, toner level sensor	N/A	N/A	RG5-5247-000CN
Cable, video interface	RH2-5335-000CN	RH2-5335-000CN	RH2-5335-000CN
Cap, toner flap	RB2-0964-000CN	N/A	N/A
Carousel assembly	RG5-5249-000CN	RG5-5249-000CN	RG5-5249-000CN
Carousel brake assembly	RG5-3309-000CN	RG5-5163-000CN	RG5-5163-000CN
Carousel drive assembly	RG5-5209-000CN	RG5-5209-000CN	RG5-5209-000CN
Cassette, 250-sheet	RG5-3400-210CN	RG5-3400-210CN	RG5-3400-210CN
Clutch (CL2), electromagnetic	RH7-5176-000CN	RH7-5176-000CN	RH7-5176-000CN
Clutch (CL3), electromagnetic	RH7-5178-000CN	RH7-5178-000CN	RH7-5178-000CN
Clutch (CL4), electromagnetic	RH7-5180-000CN	RH7-5180-000CN	RH7-5180-000CN
Clutch, one-way	RB2-0572-000CN	RB2-0572-000CN	RB2-0572-000CN
Clutch, one-way	RB2-0561-000CN	RB2-0561-000CN	RB2-0561-000CN
Clutch, one-way	RB2-0561-000CN	RB2-0561-000CN	RB2-0561-000CN
Cone	RS5-1341-000CN	RS5-1341-OOOCN	RS5-1341-OOOCN
Connector	RF5-2152-000CN	RF5-2152-000CN	RF5-2152-000CN

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Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
Continuous toner level sensor PCB	N/A	N/A	RG5-5247-000CN
Control panel assembly	RG5-3345-000CN	RG5-3345-000CN	RG5-3345-000CN
Cover, cable	RB2-1180-000CN	RB2-1180-000CN	RB2-1180-000CN
Cover, connector	RB2-1224-000CN	RB2-1224-000CN	RB2-1224-000CN
Cover, connector	RB2-0916-000CN	RB2-0916-000CN	RB2-0916-000CN
Cover, drum drawer	RG5-3315-000CN	RG5-5152-000CN	RG5-5152-000CN
Cover, ITB drawer	RG5-3320-000CN	RG5-3320-000CN	RG5-3320-000CN
Cover, left side	RG5-3313-000CN	RG5-5151-000CN	RG5-5151-000CN
Cover, lower rear	RB2-1206-000CN	RB2-1206-000CN	RB2-1206-000CN
Cover, plate	RB2-1572-000CN	RB2-1572-000CN	RB2-1572-000CN
Cover, rear	RB2-1205-000CN	RB2-1205-000CN	RB2-1205-000CN
Cover, right front	RG5-3310-000CN	RG5-3310-000CN	RG5-3310-000CN
Cover, right side	RB2-1203-000CN	RB2-1203-000CN	RB2-1203-000CN
Cover, roller	RB1-9001-000CN	RB1-9001-000CN	RB1-9001-000CN
Cover, toner access	RF5-2076-000CN	RF5-3137-000CN	RF5-3137-000CN
Cover, top	RG5-3300-000CN	RG5-5150-000CN	RG5-5150-000CN
DC controller PCB	RG5-3809-000CN	RG5-5254-000CN	RG5-5254-000CN
DC controller PCB	RG5-3809-000CN	RG5-5254-000CN	RG5-5254-000CN
Developing PCB	RG5-3811-000CN	RG5-5180-000CN	RG5-5180-000CN
Developing PCB	RG5-3811-000CN	RG5-5180-000CN	RG5-5180-000CN
Door switch assembly	RG5-5170-000CN	RG5-5170-000CN	RG5-5170-000CN
Door, rear access	RG5-3325-040CN	RG5-3325-040CN	RG5-3325-040CN
Drawer switch assembly	RG5-3296-040CN	RG5-3296-030CN	RG5-3296-030CN

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Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
Drum bushing assembly	RG5-3319-000CN	RG5-3319-000CN	RG5-3319-000CN
Drum drawer assembly	RG5-5230-000CN	RG5-5142-000CN	RG5-5142-000CN
Drum drawer assembly	RG5-5230-000CN	RG5-5142-000CN	RG5-5142-000CN
Drum drive assembly	RG5-3170-000CN	RG5-3170-000CN	RG5-3170-000CN
Duplex unit	C4083-67901	C4083-67901	C4083-67901
Duplexing feeder assembly	RG5-4055-000CN	RG5-4055-000CN	RG5-4055-000CN
Face-down delivery assembly	RG5-5135-000CN	RG5-5135-000CN	RG5-5135-000CN
Fan, large	RH7-1346-000CN	RH7-1435-000CN	RH7-1435-000CN
Fan, small	RH7-1407-000CN	RH7-1407-000CN	RH7-1407-000CN
Feeder assembly	RG5-3226-000CN	RG5-5117-000CN	RG5-5117-000CN
Filter, air (large)	RB2-1282-000CN	RB2-1282-000CN	RB2-1282-000CN
Filter, air (small)	RB2-1283-000CN	RB2-1283-000CN	RB2-1283-000CN
Firmware DIMM	C4084-60004	C4084-60004	C9130-60004
Formatter PCB	C4084-69001	C4084-69001	C4227-69001
Fuser, 110V	RG5-5154-000CN C4084-69002*	RG5-5154-000CN C4084-69002*	RG5-5154-000CN C4084-69002*
Fuser, 220V	RG5-5155-000CN C4084-69003*	RG5-5155-000CN C4084-69003*	RG5-5155-000CN C4084-69003*
Gear assembly	RG5-3228-000CN	RG5-3228-000CN	RG5-3228-000CN
Gear, 125T	RS6-0176-000CN	RS6-0176-000CN	RS6-0176-000CN
Gear, 16T	RS6-0151-000CN	RS6-0151-000CN	RS6-0151-000CN
Gear, 17T	RS6-0158-000CN	RS6-0158-000CN	RS6-0158-000CN
Gear, 17T	RS6-0158-000CN	RS6-0158-000CN	RS6-0158-000CN
Gear, 18T	RS6-0140-000CN	RS6-0140-000CN	RS6-0140-000CN
Gear, 18T	RS6-0139-000CN	RS6-0139-000CN	RS6-0139-000CN
Gear, 18T	RS6-0139-000CN	RS6-0139-000CN	RS6-0139-000CN

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Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
Gear, 18T/14T	RS6-0157-000CN	RS6-0157-000CN	RS6-0157-000CN
Gear, 18T/52T	RF5-2161-000CN	RF5-2161-000CN	RF5-2161-000CN
Gear, 19T	RS6-0141-000CN	RS6-0141-000CN	RS6-0141-000CN
Gear, 20T	RS6-0138-000CN	RS6-0138-000CN	RS6-0138-000CN
Gear, 24T/37T	RS6-0163-000CN	RS6-0163-000CN	RS6-0163-000CN
Gear, 26T	RS6-0149-000CN	RS6-0149-000CN	RS6-0149-000CN
Gear, 26T	RS6-0159-000CN	RS6-0159-000CN	RS6-0159-000CN
Gear, 26T/18T	RS6-0137-000CN	RS6-0137-000CN	RS6-0137-000CN
Gear, 27T	RS6-0135-000CN	RS6-0135-000CN	RS6-0135-000CN
Gear, 27T	RS6-0135-000CN	RS6-0135-000CN	RS6-0135-000CN
Gear, 29T	RS6-0150-000CN	RS6-0150-000CN	RS6-0150-000CN
Gear, 29T	RS6-0150-000CN	RS6-0150-000CN	RS6-0150-000CN
Gear, 29T	RS6-0152-000CN	RS6-0152-000CN	RS6-0152-000CN
Gear, 29T/17T	RS6-0145-000CN	RS6-0145-000CN	RS6-0145-000CN
Gear, 30T/16T	RS6-0134-000CN	RS6-0134-000CN	RS6-0134-000CN
Gear, 31T	RS6-0136-000CN	RS6-0136-000CN	RS6-0136-000CN
Gear, 34T/15T	RS6-0144-000CN	RS6-0144-000CN	RS6-0144-000CN
Gear, 35T	RS6-0132-000CN	RS6-0132-000CN	RS6-0132-000CN
Gear, 37T	RS6-0143-000CN	RS6-0143-000CN	RS6-0143-000CN
Gear, 37T/14T	RS6-0133-000CN	RS6-0133-000CN	RS6-0133-000CN
Gear, 39T/31T	RS6-0154-000CN	RS6-0154-000CN	RS6-0154-000CN
Gear, 47T	RS6-0147-000CN	RS6-0147-000CN	RS6-0147-000CN
Gear, 49T	RS6-0153-000CN	RS6-0153-000CN	RS6-0153-000CN
Gear, 52T	RS6-0146-000CN	RS6-0146-000CN	RS6-0146-000CN
Gear, 53T	RS6-0155-000CN	RS6-0155-000CN	RS6-0155-000CN
Gear, 53T/46T	RS6-0156-000CN	RS6-0156-000CN	RS6-0156-000CN
Guide, cable	RB2-1277-000CN	RB2-1277-000CN	RB2-1277-000CN
Guide, cable, lower	RB2-1456-000CN	RB2-1456-000CN	RB2-1456-000CN
Guide, upper drum drawer cable	RB2-1457-000CN	N/A	N/A
Handle, ITB drawer	RB2-1361-000CN	RB2-1361-000CN	RB2-1361-000CN
High-voltage power supply	RG5-3285-000CN	RG5-5165-000CN	RG5-5165-000CN

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Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
ICL cam assembly	RG5-3242-000CN	RG5-3242-000CN	RG5-3242-000CN
Indicator, paper level	RB1-9009-000CN	RB1-9009-000CN	RB1-9009-000CN
Interconnect PCB	RG5-3808-000CN	RG5-3808-000CN	RG5-3808-000CN
Interconnect PCB	RG5-3808-000CN	RG5-3808-000CN	RG5-3808-000CN
I/O card	C4081-60001	C4081-60001	C4207-60001
ITB assembly	RG5-5173-000CN	RG5-5173-000CN	RG5-5173-000CN
ITB cam assembly	RG5-3241-000CN	RG5-3241-000CN	RG5-3241-000CN
ITB drawer assembly	RG5-5120-100CN	RG5-5120-100CN	RG5-5120-100CN
ITB drawer connector	VS1-6174-014CN	VS1-6174-014CN	VS1-6174-014CN
Kit, carousel flap	C4084-67909	C4084-67907	C4084-67907
Kit, fuser deflector	C4084-67906	C4084-67906	C4084-67906
Kit, imaging drum drawer	RG5-5230-000CN	N/A	N/A
Laser/scanner assembly	RG5-5175-000CN	RG5-5175-000CN	RG5-5175-000CN
Lever, sensor	RB2-0576-000CN	RB2-0576-000CN	RB2-0576-000CN
Limiter, torque	RB1-8974-000CN	RB1-8974-000CN	RB1-8974-000CN
Link rowel	RB2-0614-000CN	RB2-0614-000CN	RB2-0614-000CN
Metal tab, Tray 2	RB2-0593-000CN	RB2-0593-000CN	RB2-0593-000CN
Microswitch	WC2-5330-000CN	WC2-5330-000CN	WC2-5330-000CN
Microswitch, ITB	WC2-5330-000CN	WC2-5330-000CN	WC2-5330-000CN
Motor (M1), fusing assembly	RG5-3227-000CN	RG5-3227-000CN	RG5-3227-000CN
Motor(M2), pick-up	RH7-1343-000CN	RH7-1343-000CN	RH7-1343-000CN
Paper feed PCB	RG5-3810-000CN	RG5-3810-000CN	RG5-3810-000CN
Paper feed PCB assembly	RG5-3810-000CN	RG5-3810-000CN	RG5-3810-000CN

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Description	Parts for 4500 series xx*G*... and below	Parts for 4500 series xx*H*... and above	Parts for HP Color LaserJet 4550 printer
Paper size sensor PCB	RG5-3816-000CN	RG5-3816-000CN	RG5-3816-000CN
Plate, left	RF5-2094-000CN	RF5-2094-000CN	RF5-2094-000CN
Plate, right	RF5-2095-000CN	RF5-2095-000CN	RF5-2095-000CN
Plate support	RF5-2138-000CN	N/A	N/A
Power supply, 110V	RH3-2219-000CN	RH3-2219-000CN	RH3-2219-000CN
Power supply, 220V	RH3-2220-000CN	RH3-2220-000CN	RH3-2220-000CN
Rod, delivery	RB2-1284-000CN	RB2-1284-000CN	RB2-1284-000CN
Roller	RF5-2092-000CN	RF5-2092-000CN	RF5-2092-000CN
Roller	RB2-0717-000CN	RB2-0717-000CN	RB2-0717-000CN
Roller	RB2-0744-000CN	RB2-0744-000CN	RB2-0744-000CN
Roller, paper pick	RB1-8865-000CN	RB1-8865-000CN	RB1-8865-000CN
Roller, separation	RF5-1885-000CN	RF5-1885-000CN	RF5-1885-000CN
Roller, separation	RF5-1885-000CN	RF5-1885-000CN	RF5-1885-000CN
Roller, transfer	RF5-2112-000CN	RF5-2112-000CN	RF5-2112-000CN
Rowel swing assembly	RG5-4696-000CN	RG5-4696-000CN	RG5-4696-000CN
Sensor (PS3), last paper	WG8-5364-000CN	WG8-5364-000CN	WG8-5364-000CN
Sensor (PS4), multi-purpose tray paper	WG8-5309-000CN	WG8-5309-000CN	WG8-5309-000CN
Sensor (PS6), fusing unit pressure release	WG8-5309-000CN	WG8-5309-000CN	WG8-5309-000CN
Sensor (PS7), delivery paper	FH7-7313-000CN	FH7-7313-000CN	FH7-7313-000CN
Sensor (PS8), cassette paper	WG8-5309-000CN	WG8-5309-000CN	WG8-5309-000CN
Sensor (PS10), carousel position	WG8-5362-000CN	WG8-5362-000CN	WG8-5362-000CN
Sensor, continuous toner level	N/A	N/A	RG5-5247-000CN
Sensor (PS12), toner level	RG5-3355-000CN	RG5-3355-000CN	RG5-3355-000CN
Sensor (PS13), waste toner	RG5-3292-000CN	RG5-3292-000CN	RG5-3292-000CN

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Description	Parts for 4500 series xx*G...* and below	Parts for 4500 series xx*H...* and above	Parts for HP Color LaserJet 4550 printer
Sensor (PS14), density	RG5-3281-000CN	RG5-5149-000CN	RG5-5149-000CN
Sensor, paper size	RG5-3234-000CN	RG5-3234-000CN	RG5-3234-000CN
Shaft, paper pick	RB2-0545-000CN	RB2-0545-000CN	RB2-0545-000CN
Solenoid, Tray 2 feed (SL2)	RG5-3245-000CN	RG5-5119-000CN	RG5-5119-000CN
Spacer	RS5-6210-000CN	RS5-6210-000CN	RS5-6210-000CN
Spring, grounding	RB2-0981-000CN	RB2-0981-000CN	RB2-0981-000CN
Spring tension	RS5-2800-000CN	RS5-2800-000CN	RS5-2800-000CN
Spring, tension	RS5-2754-000CN	RS5-2754-000CN	RS5-2754-000CN
Spring, toner flap	RS5-2739-000CN	RS5-2739-000CN	RS5-2739-000CN
Spring, torsion	RB1-9016-000CN	RB1-9016-000CN	RB1-9016-000CN
Spring, Tray 2 pickup tension	RS5-2794-000CN	RS5-2794-000CN	RS5-2794-000CN
Strap, cover support	RB2-1556-000CN	RB2-1556-000CN	RB2-1556-000CN
Transfer assembly, secondary	RG5-3235-000CN	RG5-5115-000CN	RG5-5115-000CN
Transfer cam assembly	RG5-3240-000CN	RG5-5118-000CN	RG5-5118-000CN
Tray, extension	RB2-1215-000CN	RB2-1215-000CN	RB2-1215-000CN

*These parts require exchange

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9 Image quality

Overview

This chapter includes information on the following topics:

- The printer cleaning page
- Image formation troubleshooting
- Examples of image defects and recommended corrective actions
- Overhead transparency defect troubleshooting
- Repetitive defect troubleshooting

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Image formation troubleshooting

Before beginning image formation troubleshooting, check that the media meets the specifications listed in the *HP LaserJet Printer Family Print Media Guide*.

Print density test and color checks

Use the configuration page to check the print density of the black, primary, and process color levels. Solid black- and color-filled areas on the configuration page demonstrate the ability to print at full density.

In addition to the items listed above, the configuration page provides the following information:

- It helps isolate the problem to the software or the printer.
- It shows that all colors print.

The following media-related items are responsible for many image formation and print-quality defects:

- rough paper
- heavy paper
- transparencies out of the specified thickness range
- paper that has absorbed too much moisture from the atmosphere
- room environment (humidity too high or low)

Understanding color variations

The printed output might not match the computer screen, and the colors printed on successive pages might not match. While color variations are inherent in this printing method, they can indicate changes in the printing environment, print media, or printer components.

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Common causes of color variation

The following list outlines the major causes of color variations between computers, applications, and output devices.

- Halftone patterns produced on monitors and the types of patterns used in the print jobs are different and might cause variations in the printed output.
- The printed output differs from the image on the monitor because the monitor and the print media have different reference values of black and white. The monitor screen has charcoal gray for the black level, and the white on the monitor screen is actually blue. Black on the print media is limited only by the fill capability of the printer, and most good quality paper has a very high white level. In addition, phosphor (used in color monitors) and toner have entirely different spectra characteristics and different color-rendering capabilities. Differences between output are common. Blues generally match better than reds.
- The color of the ambient light changes the perception of color. Fluorescent light lacks many colors present in incandescent light, and the color range of natural light is broader than any artificial light. When comparing color, choose a standard light source for reference and understand that the perceived color will change as the light changes.
- Long-term color variations occur as paper ages. Use high-quality paper and protect the paper from sunlight to help minimize discoloration.
- Environmental changes can cause color variation. The development process places a high potential across an air gap to attract toner to the imaging drum. Changes in relative humidity vary the point at which the toner travels to the imaging drum.
- All consumable components have a finite life span, and as these components reach the end of their useful life, their ability to produce consistent print quality diminishes.
- Paper roughness can cause colors to look different. Use standard paper.

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Color selection process

The user selects the color in the application, but the operating system might convert or modify some characteristics of the color before sending the information to the printer driver. The printer driver might also modify color characteristics depending upon the selected output mode.

Any color characteristics not addressed by the printer driver or applications are set to the printer default. The default color might not match the color the user selected.

Customizing color output through printer drivers

The printer driver, which is installed with your printer software, enables your software applications to use the features of the printer. It also gives you customized control of color text, graphics, and photos.

The method of accessing your printer driver depends on your computer's operating system. For specific instructions on accessing printer drivers, see the printer driver's Readme file, which is included on the printing system CD-ROM.

The following color control features are available only through your HP printer driver. See the printer driver's on-line Help for details on color settings and their effect on printed output.

Halftone options

Halftone options affect the resolution and clarity of your color output. You can select halftone settings for text, graphics, and photos independently. The two halftone options are smooth and detail.

The smooth option provides better results for large, solid-filled print areas. It also enhances photos by smoothing out fine color gradations.

The detail option is useful for text and graphics that require sharp distinctions among lines or colors, such as images that contain a pattern or a high level of detail.

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HP ColorSmart II

HP ColorSmart II is a set of technologies that enables optimal color output automatically for diverse types of documents.

HP ColorSmart II utilizes object tagging and Standard RGB (sRGB) color technologies. Object tagging allows optimal color and halftone settings to be used for different objects on a page (text, graphics and photos). The printer analyzes the page (what objects it contains) and intelligently uses halftone and color settings that provide the best print quality for each object. Object tagging, combined with optimized default settings, produces great color out of the box.

In the Windows environment, you will find the HP ColorSmart II **Automatic** and **Manual** settings on the Color tab in the printer driver.

Vivid color

Vivid Color allows print to have a higher color saturation by putting more toner on the page, however, this may cause high potential for scatter.

Screen match

Screen Match (sRGB) (standard red-green-blue) prints colors that are close to those you see on your screen. Screen Match can be useful for retouching photographs or when you have created colors on your screen that you wish to reproduce, such as special colors for a company logo.

Note

Factors such as the type of monitor you use and the room's lighting can affect the appearance of colors on your screen.

Print in grayscale

The Print in Grayscale option in the printer driver allows you to print documents using shades of gray in place of colors. This option is ideal for printing proofs of color documents, or for printing documents that will later be faxed or photocopied.

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Matching colors

The process of matching printer output color to your monitor is quite complex because printers and computer monitors use different methods of producing color. Monitors *display* colors by light pixels using an RGB (red, green, blue) color process, but printers *print* colors using a CMYK (cyan, magenta, yellow, and black) process.

Color-matching factors

Several factors can influence your ability to match printed colors to those on your monitor. These factors include:

- Print media
- Printer colorants (inks or toners for example)
- Printing process (inkjet, press or laser technology for example)
- Overhead lighting
- Personal differences in perception of color
- Software applications
- Printer drivers
- PC operating system
- Monitors
- Video cards and drivers

For most users, the best method for matching colors on your screen to your printer is to print sRGB colors. The HP Color LaserJet 4550 uses HP ColorSmart II, which uses sRGB and automatically optimizes color output. Keep in mind the above factors when colors on your screen do not perfectly match your printed colors.

Matching PANTONE®* colors

The PANTONE®* Matching System colors are specified as CMYK colors as supported in many graphics software applications. This color-matching system is useful for matching printer output to a specific color (for example, a logo). See the documentation for your software application for instructions on using PANTONE®* colors.

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For more information about using PANTONE®* colors, see the Readme file for the PANTONE® color-matching system included on the printing system CD-ROM.

Note

Color settings, halftone settings, and print media affect the appearance of PANTONE®* colors. To optimize PANTONE®*-certified colors, use the default PostScript 3 emulation driver settings and HP LaserJet paper.

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Adjusting color balance

This printer features automatic color calibration to provide high-quality color output. In situations that require critical color control, you can manually adjust the density balance of the printer's four toner colors.

CAUTION

This procedure should only be performed by your network administrator. Performing this procedure changes the color balance of the printer by altering halftones and affects *all* print jobs.

To adjust color balance

Step 1: Print a color balance calibration page

The color balance calibration page (shown below) displays current color settings and provides a record of the printer's initial settings before any adjustments are made.

1. Press **MENU** until `CALIBRATION MENU` displays.
2. Press **ITEM** until `PRINT CALIBRATION PAGE` displays.
3. Press **SELECT** to print the color balance calibration page. The page consists of four color bars (cyan, magenta, yellow, and black) and a box containing gray balance circles. The factory default setting for each color is zero. The range of settings is -5 to +5.

Note

Adjusting densities using the four color bars provides coarse color balance adjustments. After making these adjustments, you can fine-tune color densities by adjusting the gray balance. (See step 7 for instructions.)

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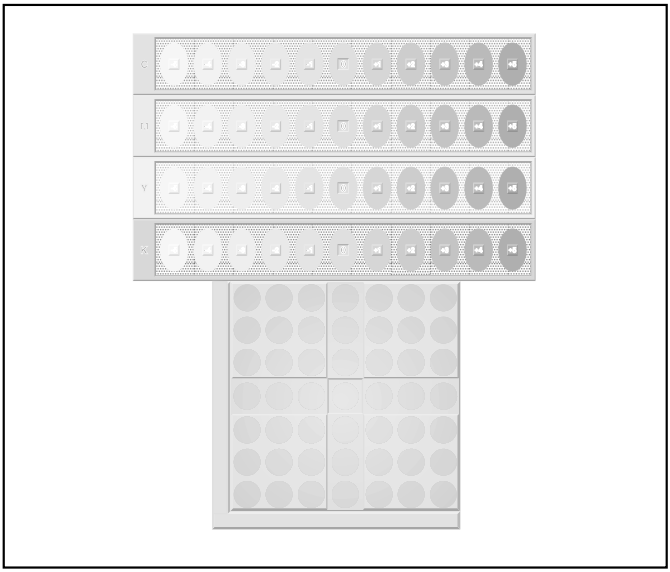

Color balance calibration page

Step 2: Adjust the cyan (C) density setting

Examine the cyan density bar (C) on the color balance calibration page from a distance of 2 meters (6 feet). If the center oval matches the background pattern more than the other ovals, the cyan density does not need to be adjusted and you should continue on to the magenta (M) setting. If an oval left of center or right of center matches the background more than the center oval, use the following steps to enter the number:

1 Press **ITEM** until CYAN DENSITY displays.

2 Press the right side of the **VALUE** key to increase the value, or press the left side to decrease it, until the number corresponding to the oval that most closely matches the background pattern is displayed.

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3 Press **SELECT** to save the value. An asterisk (*) displays next to the selected setting.

Step 3: Adjust the magenta (M) density setting

Examine the magenta density bar (M). If the center oval matches the background pattern more than the other ovals, the magenta density does not need to be adjusted and you should continue with the next step. If not, use the following steps to adjust the density:

1 Press **ITEM** until `MAGENTA DENSITY` displays.

2 Press the right side of the **VALUE** key to increase the value, or press the left side to decrease it, until the number corresponding to the oval that most closely matches the background pattern is displayed.

3 Press **SELECT** to save the value. An asterisk (*) displays next to the selected setting.

Step 4: Adjust the yellow (Y) density setting

Examine the yellow density bar (Y). If the center oval matches the background pattern more than the other ovals, the yellow density does not need to be adjusted and you should continue with the next step. If not, use the following steps to adjust the density:

1 Press **ITEM** until `YELLOW DENSITY` displays.

2 Press the right side of the **VALUE** key to increase the value, or press the left side to decrease it, until the number corresponding to the oval that most closely matches the background pattern is displayed.

3 Press **SELECT** to save the value. An asterisk (*) displays next to the selected setting.

Step 5: Adjust the black (K) density setting

Examine the black density bar (K). If the center oval matches the background pattern more than the other ovals, the black density does not need to be adjusted and you should continue with the next step. If not, use the following steps to adjust the density:

1 Press **ITEM** until `BLACK DENSITY` displays.

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2 Press the right side of the **VALUE** key to increase the value, or press the left side to decrease it, until the number corresponding to the oval that most closely matches the background pattern is displayed.

3 Press **SELECT** to save the value. An asterisk (*) displays next to the selected setting.

Step 6: Reprint the color balance calibration page (see step 1)

Step 7: Adjust gray balance

Note

Adjusting densities using the gray balance pattern allows you to fine-tune color balance. This process affects all four color bars.

Examine the gray balance circles in the box at the bottom of the color balance calibration page. If the circle in the center most closely matches the background pattern, then the gray balance does not need to be adjusted. If the circle does not match, use the following steps to adjust gray balance.

1 Locate the gray circle that most closely matches the background. The magenta (M) and yellow (Y) numbers associated with this circle indicate the optimum gray balance settings for these colors.

2 Adjust the magenta and yellow settings (yellow is horizontal and magenta is vertical) until the gray circle is in the middle. Use the values from the bars above to select the value to be entered.

3 After making adjustments to the magenta and yellow settings, press **GO** to return the printer to the READY state.

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Image Defect Table

For more information, see the page numbers below each image.

Image Defect Table

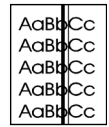
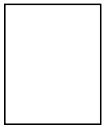
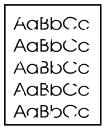
Background scatter (see page 170)	Banding and horizontal lines (see page 170)	 Black lines (see page 172)	Black or partially black pages (see page 172)
 Blank page or white pages (see page 173)	No image available Blank spots (see page 174)	Character voids (see page 174)	Distorted image (see page 175)
 Dropouts (see page 176)	Faded print, faded areas, or faded vertical streaks (see page 176)	No image available Ghosting (see page 177)	Gray background (see page 177)

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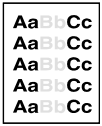
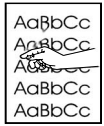
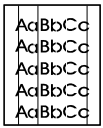
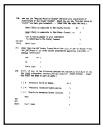
Image Defect Table (continued)

Irregular raised spots or stray toner (see page 178)	 Light print, dark print, faded print (see page 178)	No image available Light black or no black print (see page 179)	 Loose toner (see page 180)
No image available Mottled or marbled output (see page 180)	Random black spots (see page 180)	No image available Sharkskin (see page 181)	No image available Single color missing (see page 181)
No image available Sunburn (see page 181)	Toner smear (see page 182)	 Vertical lines or streaks (see page 182)	 Wavy characters (see page 183)

Additional defect information is found in the following sections:

- Overhead transparency defects (see page 184)
- Repetitive defects (see page 187)

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Image defect details

Background scatter

- The media does not meet HP specifications.
- The toner cartridge is defective.
- The inside of the printer is dirty.
- The transfer roller is dirty or worn. Generate a cleaning page.

Banding and horizontal lines

Banding occurs when solid fill areas show streaks or bands of shade variations. This can be caused by:

- Worn, damaged, or contaminated gears
- Consumables that are beyond their rated life
- Improper consumable storage

If the problem persists:

- Print a configuration page to check the life of the consumables. Replace any consumable that is past its rated life.
- Banding is more visible in some halftone patterns than in others. Print a page using a halftone pattern such as “banddiag” provided in the Color Smart selection in the printer driver. If the defect occurs only once on a letter-size sheet, try printing the pattern on a legal-size sheet.

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- Observe the following from the test sample:
  - Check the spacing or “pitch” between the defects.
  - Check to see if the defect spans all color planes.
  - If the defect is in all color planes, does the defect produce a straight line through all color planes or does it move from one color plane to the next?
  - If the defect moves from one color plane to the next, measure the amount it moves. This movement amount is called the “procession.” Keep in mind the print order is K-M-C-Y. Measure the procession from K to M or M to C, not K to C.

CAUTION

Do not expose the drum to light for more than 15 seconds. The drum is light sensitive, and exposure to light can cause permanent damage.

Banding — horizontal

- The imaging drum may have been exposed to light. (See “Sunburn” on page 181.)
- The ITB may accumulate contamination on its rollers causing a random mechanical banding. If you notice buildup on the rollers, replace the ITB.
- As the developer rotates, the gap between the imaging drum and the developer can vary slightly. This can cause toner to be transferred lighter or darker every 37 mm. This defect is more apparent in secondary colors. There is no workaround.

Banding — vertical

- The doctor blade on the developer can develop notches over time. If you observe severe notching, replace the developer.
- As the imaging drum gets older, the charge roller doesn’t charge the imaging drum as well as it used to. If you notice buildup or contamination on the charge roller, replace the imaging drum.

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Black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fusing assembly is contaminated or damaged.
- The static eliminator teeth are contaminated or defective
- The imaging drum is damaged or the waste toner collection in the drum is full. Replace the imaging drum.

Black or partially black pages

- Check for poor contact between the drum cartridge contact (for primary charging bias) and the primary charging bias contact. To improve the contact, clean the contacts. If the problem persists after cleaning or the contacts are deformed or damaged, replace them. If the contacts have slipped off, adjust them correctly.
- Check the drum cartridge (primary charging roller). If defective, replace the drum cartridge.
- Check for poor contacts in the connectors. Reconnect the DC controller PCB connector and the high-voltage PCB 2 connector correctly.
- Check for a defective high-voltage PCB (primary charging bias output shortage). If defective, replace the high-voltage PCB 2.
- Check for a defective DC controller PCB. If defective, replace the DC controller PCB.
- If ITB clutch was removed, check for proper timing.
- The black toner cartridge is empty.
- Make sure clutch CL2 is connected (plugged into the paper PCA).
- This defect can be caused by improper timing on the ITB clutch gears. Make sure that the cams are in sync. The two white gears on the left side of the printer should have two timing marks pointing toward each other.
  - Cams with a single line should be off one tooth clockwise on the right gear.
  - Cams with a double line should be aligned.

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Blank or white pages

- Your software application is sending an extra page-eject command.
  - Check the software's printing configuration information.
- There is a problem with the network configuration. Some sharing devices on networks may generate a blank page as a separator.
  - Check with the network administrator.
- The printer may be feeding two or more pages at once because the paper is difficult to separate.
- The sealing tape has been left in the toner cartridge.
- The toner cartridge is empty or defective.
- The laser scanner door does not open properly.
  - Remove and reseat the toner cartridge.
  - Check the laser scanner shutter door for proper operation.
- The toner cartridge guide is damaged, improperly positioned, or missing.
- There is no transfer roller voltage.
  - Perform the Half Self-Test Functional Check to check all other electrophotographic processes.
  - Replace the transfer roller if necessary.
- The high-voltage connectors are mounted on the high-voltage power supply (HVPS) PCA and protrude into the toner cartridge cavity.
  - Check the springs for functionality. Clean if dirty; replace if defective or missing.
  - The HVPS PCA is defective.
- The DC controller PCA is defective.
- There is no developing bias.
  - Clean the high-voltage power supply contacts. With no developing bias charge, toner is not attracted to the drum.
- There is no drum ground path.
  - Check the drum ground.
- The laser scanner cable assembly is defective.

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- The page length and margins are not set correctly for the paper size. Verify that the ribbon connector at J1307 of the HVPS is properly seated.
- If the HVPS has been removed recently, verify that the ribbon connector from the DC controller PCA to the HVPS is properly seated at both ends.
- Verify that the photoconductive drum is rotating properly. Perform the drum diagnostic test to visually observe if the drum is rotating or using a felt-tipped marker place an index mark on the edge of the drum outside the image area. Turn on the printer (wait for drum rotation to occur) then look to see if the drum has moved. If the drum has not moved, investigate the mechanical and electrical drum rotation circuitry and movement mechanisms.
- The imaging drum shutter may not be retracting. Replace the imaging drum.

Blank spots

- The paper does not meet HP paper specifications or is stored improperly.
- The toner cartridge is defective.
- The transfer roller is dirty or defective.

Character voids

- Use paper that meets HP paper specifications.
  - The surface of the paper is too rough or the paper's surface is too smooth for proper toner adhesion.
  - Printing is on the wrong side of the paper.
  - The transparencies are not designed for proper toner adhesion.
  - The transfer roller is defective.
  - The laser scanner assembly is defective.

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Colorless output (black only)

- Make sure clutch CL2 is connected (plugged into the paper PCA).
- This defect can be caused by improper timing on the ITB clutch gears. Make sure that the cams are in sync. The two white gears on the left side of the printer should have two timing marks pointing toward each other.
  - Cams with a single line should be off one tooth clockwise on the right gear.
  - Cams with a double line should be aligned.
- Check for a defective development PCB. If defective, replace the development PCB.
- Check for a defective DC controller PCB. If defective, replace the DC controller PCB.

Distorted image

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet HP specifications.
- The connection of the cables to the laser scanner is poor.
- The connection of the cables to the ECU is poor.
- The laser scanner is defective.
- The DC controller is defective.

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Dropouts

- The paper does not meet HP paper specifications.
- The printer's operating environment does not meet specifications.
- The print density is set incorrectly.Change to a darker setting and retry printing.
- The DC controller PCA is defective.
- The high-voltage power supply PCA is defective.
- The transfer roller is defective**.**

Faded print, faded areas, or faded vertical streaks

- The message TRANSFER KIT LOW REPLACE TRANSFER KIT appears on the printer control panel. Print out a configuration page to verify the remaining life of the transfer belt. Replace the transfer belt if necessary.
- The moisture content of your media may be uneven or too low. Use media from a different source or from a new ream of paper.
- If some areas of the paper reject toner, try using paper from a different source or from a new ream of paper.
- The media may be too rough and exceed media specifications. See "Supported media specifications" on page 90. Do not use paper that exceeds specifications.
- Check that the printing environment is within humidity specifications.
- Faded print could result from low toner in a particular toner cartridge. If a Toner Low or Toner Out message displays on the printer control panel, replace the appropriate toner cartridge.
- Check to see if the transfer belt is contaminated. Use a lint-free cloth to clean any contaminants from the transfer belt surface.
- The connections into CL2 (ITB unit separation clutch) and CL3 (ITB cleaning roller separation clutch) have been switched at the clutches, not on the PCB. (This typically shows a light black print on the page.)
- The toner cartridge is getting low on toner.
- The toner density setting is not adjusted correctly.

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- The internal mirror or optics are contaminated.
- The laser scanner is damaged.
- The document scanner needs to be recalibrated.
- There is a problem in the contact image sensor.
- There is a problem in the formatter.

Full-page ghosting

Full-page ghosting occurs when an image prints in full color on one page, but a faded copy of it is also seen on the following page.

- Make sure that the top spring in the ITB drawer is properly connected.
- Replace the ITB.
- Ensure operation of the ITB cleaning roller clutch (CL3).
- If the imaging drum is near end of life, replace it.
- If the toner cartridge is near end of life, replace it.

Gray streaks

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet specifications.
- The toner density is set incorrectly.
- The toner cartridge is defective.
- There is excess loose toner inside of the printer. Clean the printer.
- The printer is printing on envelope seams. Move the text to an area without seams.
- The imaging drum is defective or at the end of its life. Replace the drum kit.

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Irregular, raised spots or stray toner

- Toner collected on the transfer belt can cause smudging on the back of the page. Smudges commonly appear on the edges of pages after the media size is changed. The belt is self-cleaning and the smudging will normally clear within a few pages.
- Toner on the edge of the media is usually caused by toner collecting on the paper guides. Inspect the paper guides and clean with a lint-free cloth if necessary.
- Do not re-feed paper that has already been through the printer. Re-feeding paper that has already passed through the printer can contaminate the fuser causing stray toner defects.
- Paper might print with blobs after warm-up. Print a few pages to resolve the anomaly.
- Verify that all media is cleared from the paper path.
- The fuser roller is damaged. Replace the fuser kit.
- If one toner color is streaking, that toner cartridge has been damaged. Replace the toner cartridge for the streaking color.
- The paper does not meet HP paper specifications. Use media that meets HP media specifications.

Light, dark, or faded print

- The message `TRANSFER KIT LOW REPLACE TRANSFER KIT` appears on the printer control panel. Print out a configuration page to verify the remaining life of the transfer belt. Replace the transfer belt if necessary.
- The moisture content of your paper is uneven or too low. Use paper from a different source or from an unopened ream of paper.
- Some areas of the paper reject toner. Use paper from a different source or from an unopened ream of paper.
- Your paper is excessively rough. Use a smoother, xerographic paper.

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- The letterhead you are using is printed on rough paper. Try a smooth xerographic paper. If this solves your problem, consult with the printer of your letterhead to verify that the paper used meets the specifications for this printer.
- Media does not meet the specifications for this printer. Only use media that meets the media specifications for this printer.
- The printer is operating in excessively humid or dry conditions. Verify that the printing environment is within humidity specifications.
- If a TONER LOW or TONER OUT message is displayed on the printer control panel, replace the appropriate toner cartridge. If the problem persists, call for service.
- Excess toner may have been deposited on the transfer belt. Use a lint-free cloth to clean any excess toner from the transfer belt surface.
- The laser scanner is defective.
- The high-voltage power supply is defective.

Light black or no black print

- The black toner cartage is empty. Replace it.
- The HVPS may be faulty.
- The connections into CL2 and CL3 have been switched at the clutches, not on the PCB.

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Loose toner

- Loose toner is in the printer.
- The toner cartridge is defective.
- The paper is too smooth.
- The driver setting for the paper type is wrong.
- The fuser is defective..

Mottled or marbled output

Print a configuration page, and refer to the color blocks at the bottom of the page. Replace the toner cartridge of the color or colors that are marbled.

Determine which toner color needs to be replaced by looking at the secondary colors on the self-test page.

- If red and green are mottled, replace yellow.
- If red and blue are mottled, replace magenta.
- If green and blue are mottled, replace cyan.

Random black spots

- The paper you are using does not meet HP paper specifications.
- You are printing on the wrong side of the paper.
- The printer requires cleaning with a cleaning page.
- The toner cartridge is damaged.
- The imaging drum is damaged.

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Sharkskin (rough, mottled printing)

- Use paper with lower resistivity.
- Make sure the humidity and temperature are within specifications.
- Do not use Automatic Duplex mode. Duplex manually or not at all.

Single color missing

- Check for a defective light pipe sensor. If defective, replace the toner level sensor.
- Remove the toner cartridge and manually check the level of toner in the toner cartridge.

Sunburn

The imaging drum might have been exposed to light. Symptoms of sunburn are streaked or blurred lines across the length of the page (side-to-side on portrait, or top-to-bottom on landscape).

- Print 50 to 100 pages on the imaging drum to remove the sunburn.
- If sunburn symptoms are still occurring, allow the imaging drum to sit in a dark place for 2 to 3 days.
- If sunburn is severe (the symptoms don't go away), replace the imaging drum.

CAUTION

Do not expose the drum to light for more than 15 seconds. The drum is light sensitive, and exposure to light can cause permanent damage.

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Toner smear

- There is dirt on the paper.
- The fusing rollers are dirty.
- The paper does not meet HP specifications.
- The toner cartridge is defective.
- The fusing assembly is defective.
- There is dirt in the printer.
- The static eliminator is dirty or is not grounded, allowing a static charge to remain on a page.
- The DC controller PCA is defective.

Vertical lines or streaks

- Check for a leak where light might be entering the printer.
- Check for circumferential scars on the photosensitive drum. If scars are present, replace the drum cartridge if the line goes through all colors.
- Check for circumferential scars on the upper fusing roller. If scars are present, replace the upper fusing roller if the line goes through all colors.
- Remove the imaging drum cartridge and inspect main charger or imaging drum for a contaminate such as a fiber if the line goes through all colors.

Note

Do not expose the drum to light for more than 15 seconds. The drum is light sensitive, and exposure to light can cause permanent damage.

Vertical black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fuser entrance is dirty.
- The fuser has scratches on it.

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- This may be a repetitive defect. If so, the lines will be repeated at a consistent interval down the page.
- The printer needs to be cleaned.
- There is a problem in the heating element.

Vertical white lines

- If white lines or streaks appear only in the black areas of the printed media, print several configuration pages to clear the anomaly. If this does not clear the problem, check the sleeve surface to confirm the defect, then replace the black toner cartridge.
- If white lines appear only in a particular color, try printing several configuration pages to clear the error. If the error does not clear, check the sleeve surface to confirm the defect, then replace the defective toner cartridge.
- There is a lack of toner or the toner cartridge is faulty.
- There is dirt in the laser path.
- The fuser is defective.
- A mirror in the laser scanner is dirty.

Wavy characters

Mechanical instability in the scanner mechanism or the optics can cause wavy characters.

- Reprint the job to ensure that the problem persists.
- If the failure remains, replace the scanner assembly.

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Overhead transparency defects

Overhead transparencies may display any of the image quality defects shown in the previous samples. In addition, because transparencies are pliable while in the print path, they are subject to being marked by the media-handling components.

Note

Allow transparencies to cool at least 30 seconds before handling them.

- Make sure that “transparency” is checked as the media type in the Paper Tab in the printer drive. Also, make sure that the media input tray is correctly configured for transparencies. When Transparency is selected as the media type and ColorSmart II is selected on the Color tab, the printer will use a color treatment optimized for projection.
- If transparencies show lines and creases in the media or in the printed output, compare the defect against the repetitive defect ruler (see the service manual) to help isolate the cause to a particular component.
- Check that the transparencies meet the specifications listed in the *HP LaserJet Family Print Media Guide*.
- If the transparencies have spots or smudges, reprint them being careful not to touch the surface of the media. Skin oils can contaminate transparencies, causing spots and smudges.
- Small random dark areas on the trailing edge of solid fill pages may be caused by transparencies sticking together in the face up bin. Try printing the job in smaller batches.
- Send transparencies only to the face-down output bin.

Transparencies created on the printer may look rough, but they can still be used successfully on reflective-type (portable) transparency projectors.

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Dull or dark transparencies

- If the transparency colors are dull or dark, ensure the transparencies meet the specifications for this printer (part number C2934A for letter, and C2936A for A4).
- The selected colors are undesirable when printed. Select different colors in your software application or printer driver.
- Spots and smudges appear in the background areas of transparencies when they are projected. Oil from your hands can cause spots or smudges on transparencies. Reprint, being careful not to touch the surface of the transparencies.
- You are using a reflective overhead projector. Use a standard overhead projector.

Incorrect image on transparencies

This might occur even though the correct media is loaded in the correct tray. Toner might not adhere to the media and an image might show up on pages where it isn't meant to appear. (See "Full page ghosting" on page 177.)

When this occurs on transparencies, the connections for the ITB cleaning roller (clutch 3) and for the secondary transfer roller (clutch 4) might be reversed.

Repetitive defects on transparencies

Overhead transparencies that have repetitive defects spaced 131 mm (5.2 in) apart indicate a defect on the upper fuser roller.

1 Turn the printer off and unplug the printer, allow 30 minutes for the fuser to cool, and remove the fuser.

CAUTION

Make sure to allow 30 minutes before removing the fuser. The fuser will be hot.

2 Turn the fuser gears and inspect the surface of the upper fusing roller. If the roller has surface defects (gouges), replace the fusing assembly.

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Streaking on transparencies

If the transparencies have streaks, this could be due to condensed wax from the toner making its way onto the fuser assembly rollers during the fusing process. Try cleaning the fuser rollers using the following process:

1. Saturate a corner of a lint-free, static-free wipe with isopropyl alcohol.
2. Open the alternate path door (the small door) at the back of the printer.
3. Place the printer into calibration mode by opening and then closing the large door at the rear of the printer, or by pulling a drawer open, and then quickly closing it.
4. While the printer is calibrating, the fuser rollers are rolling. Place the wipe up against each roller in turn, keeping it in place for 5 to 10 seconds.

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Repetitive defects troubleshooting

Repetitive defects are defects that occur on the page. Most repetitive defects are caused by problems with one of the following:

- Developer roller
- Charge roller
- Cleaning roller
- Transfer roller
- Fuser
- Imaging drum
- Transfer belt

See the service manual for the repetitive defect ruler. See page 188 for the defect spacing chart.

CAUTION

Do not expose the imaging drum to light, and be careful not to scratch or get fingerprints on the drum surface during cleaning. Do not blow on the imaging drum.

Imaging drum defects

Causes:

- Damage such as scratches or dents on the imaging drum. These usually appear as black or white marks on the page.
- Paper dust adhering to the imaging drum. These usually appear as white marks in the dark printed areas of the page.
- Exposure of portions of the imaging drum to light. This causes light sections in the printed output. The life of the imaging drum is shortened by exposure to light.

Actions:

- Print at least four configuration pages to determine if the defect repeats in the same horizontal orientation.
- Inspect the imaging drum for scratches, dents, or other damage. Replace if needed.

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- If the problem is dust, remove the dust with isopropyl alcohol applied with a lint-free, static-free wipe. Try this only if the print defect is unacceptable and the only other alternative is replacing the imaging drum.
- Defects caused by exposure to light might clear up over time. If severe, replace the imaging drum.

Defect spacing chart

Consumable	Roller	Distance
Drum	Charge roller	40 mm (1.6 in)
	Imaging drum	152 mm (6 in)
Developer sleeve	Black developer	37 mm (1.5 in)
	Color developer	30 mm (1.2 in)
Fuser		131 mm (5.2 in)
ITB	ICL roller	40 mm (1.6 in)
Transfer roller		53 mm (2.1 in)

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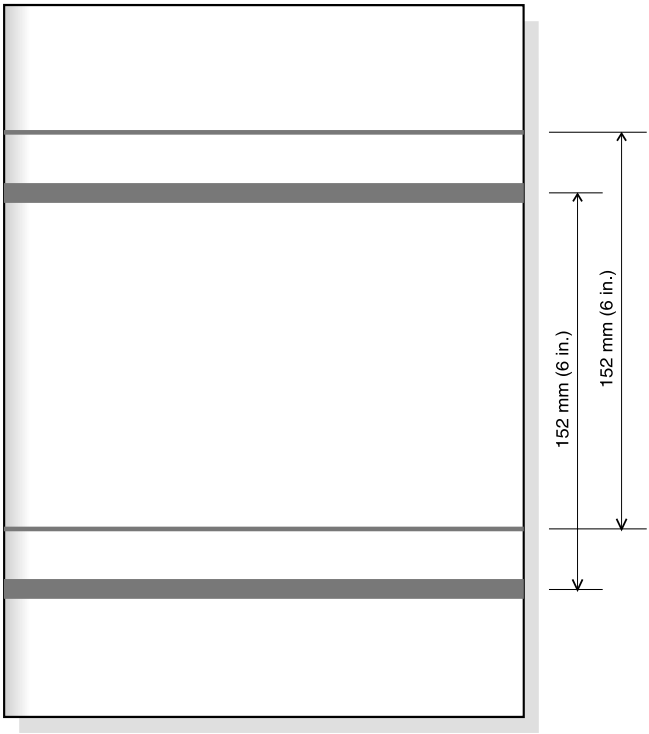

Imaging drum exposed to light (not to scale)

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10 Wiring diagrams

Overview

This chapter provides wiring diagrams.

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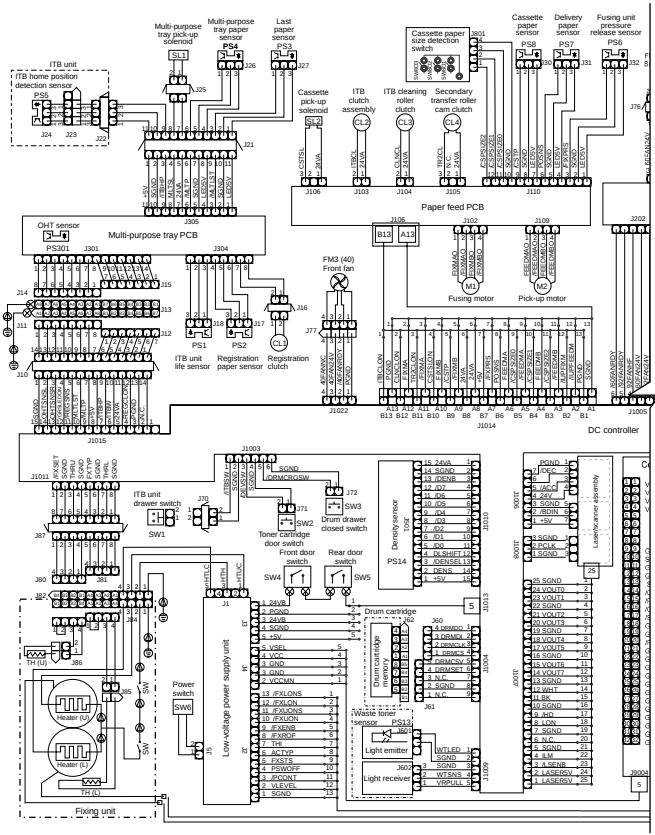
Wiring Diagrams



Wiring diagram for 4500 serial number xxG... and below (1 of 2)

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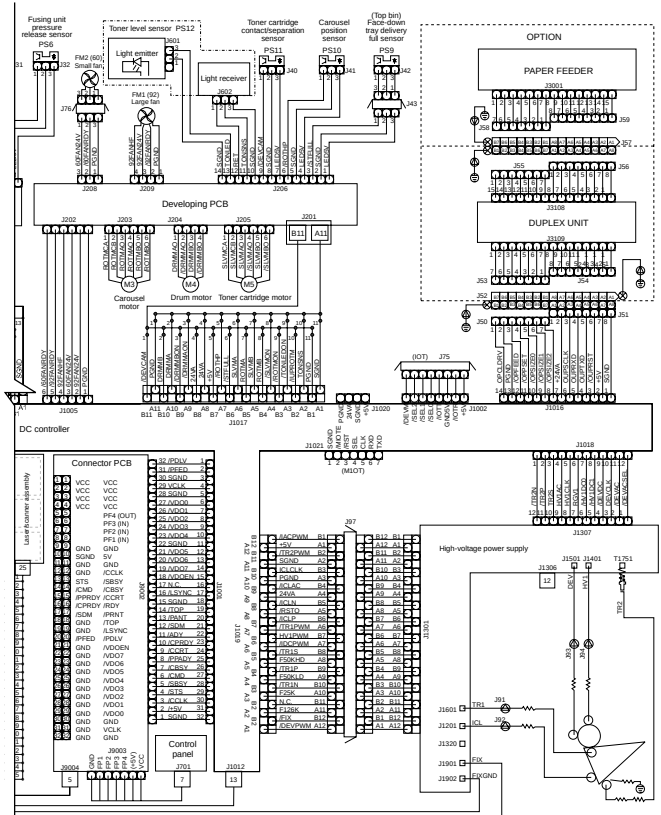

Wiring diagram for 4500 serial number xxG... and below (2 of 2)

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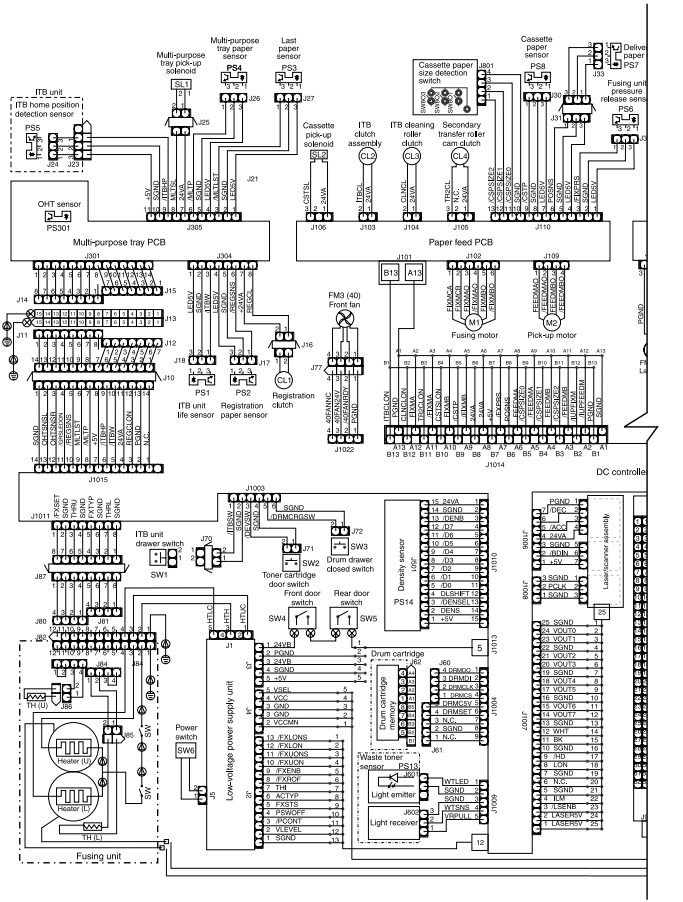

Wiring diagram for 4500 serial number xxH... and above and 4550 (1 of 2)

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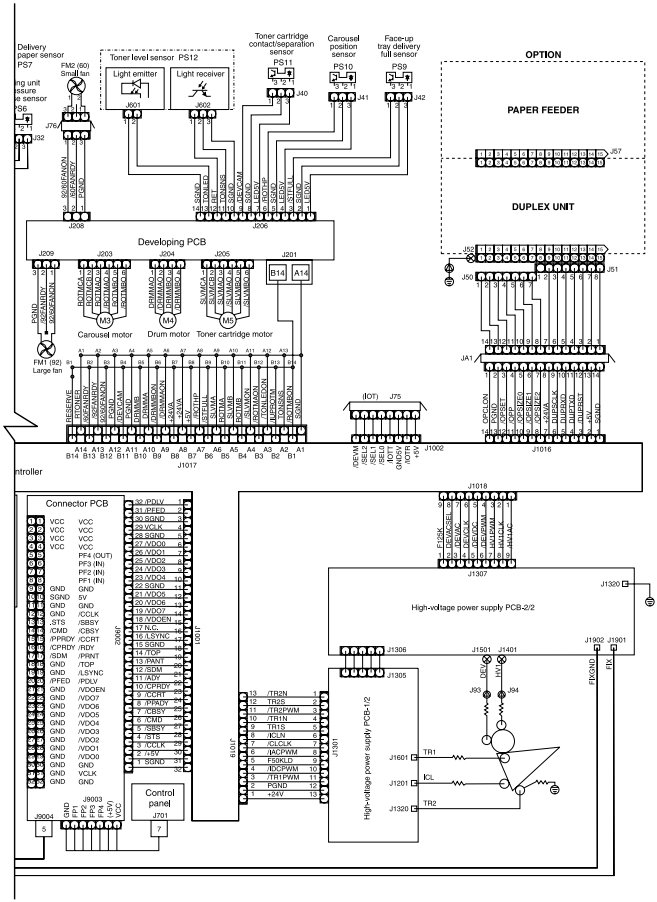

Wiring diagram for 4500 serial number xxH... and above and 4550 (2 of 2)

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11 Services and support resources

Overview

This chapter provides information on obtaining training, support, and materials.

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How to get training

Lecture/lab training (U.S. only)

Service technicians who want individual, hands-on training can attend regularly scheduled lecture/lab training classes. These classes are offered throughout the country. To receive the latest schedule, call HP FIRST at (800) 333-1917, or see the HP website (www.hp.com/go/resellertraining) and request document ID number 9104. The latest schedule will immediately be sent to the fax number of your choice. Class schedule and registration information can also be obtained by calling the centralized registration center at (512) 434-1520.

Self-paced training

The self-paced training kits include the following:

- service manual
- service/support CD-ROM

Training kit	Part number
4550/4500	C7085-67901

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Support resources—North America

HP Customer Care Reseller Sales and Service Support Center

The HP Customer Care Reseller Sales and Service Support Center is available for technical support to assist service technicians. The support center can be reached at (800) 544-9976 (U.S.).

HP end-user support options

Local support assistance

The user's first source of assistance should be their local dealer or service center. HP continuously provides local computer dealers and service centers with the latest information regarding products and services. To locate the nearest authorized dealer or service center, call (800) 243-9816 (U.S.) or (800) 387-3867 (Canada).

Printer drivers by mail

To obtain printer drivers, contact the software application manufacturer. HP distributes printer drivers for a few of the most popular applications. Call (805) 257-5565, 6 days a week, 24 hours a day (closed Sundays). Shipping and handling charges may apply on some printer drivers.

Electronic information services

For 24-hour access to information via modem, we suggest:

- **Internet –**Printer drivers and product and support information can be obtained from the HP Customer Care Online at http://www.hp.com/cposupport/eschome.html or from the HP anonymous file transfer protocol (FTP) site. The site is available

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to anyone with FTP access to the Internet. Access through the World Wide Web is available at URL http://www.hp.com/go/support or http://www.hp.com/go/resellertraining/.

Telephone assistance—in warranty

Call the HP Customer Care Center at (208) 323-2551 Monday through Friday from 6 am to 10 pm (Mountain Time) free of charge during the warranty period. However, your standard long-distance telephone charges still apply. Have your system nearby and your serial number ready when calling.

Telephone assistance—post-warranty

Post-warranty telephone assistance is available to answer your product usage questions at the HP Customer Care Center. Call (900) 555-1500 ($2.50 per minute, U.S. only) or call (800) 999-1148 ($25 per call, Visa or MasterCard, U.S. and Canada) Monday through Friday from 7 am to 6 pm and Saturday from 9 am to 3 pm (Mountain Time). *Charges begin only when you connect with a support technician. *Prices subject to change.*

Hardware repair services

To locate a local authorized repair center for hardware repair needs, call (800) 243-9816. HP also offers a variety of service contract options to complement the standard warranty by calling (800) 743-8308 (U.S.) or (800) 268-1221 (Canada).

Note

Additional service telephone numbers are listed at the back of this manual.

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Ordering parts

Field replaceable and accessory part numbers are found in Chapter 8 of this manual. Replacement parts can be ordered from HP's Commercial Support Services Organization-Americas (CSSO-A) or HP's Commercial Support Services Organization-Europe (CSSO-E).

Use only accessories specifically designed for this printer. Accessories can be ordered from an authorized service or support provider. See "Ordering related documentation and software" on page 203.

By phone:

- Commercial Support Services Organization-Americas (CSSO-A) (1)(800) 227-8164 (US only)
- Commercial Support Services Organization-Europe (CSSO-E) (49) (070) 3114-2253

By mail:

Hewlett-Packard Company
Commercial Support Services
Organization-Americas
8050 Foothills Blvd.
Roseville, CA 95678

Hewlett-Packard Company
Commercial Support Services
Organization-Europe
Wolf-Hirth Straße 33
D-7030 Böblingen, German

Note

Use only accessories specifically designed for this printer.

Spare parts and consumable supplies for this product will be made available for at least 5 years after production has stopped.

Ordering consumables

Consumables may be ordered directly from Hewlett-Packard. The telephone numbers for ordering consumables are:

- U.S. (800) 538-8787
- Canada (800) 387-3154; Toronto (416) 671-8383
- United Kingdom 0734-441212

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- Other local telephone numbers may also be available

Ordering field replaceable units

The HP Color LaserJet 4500 printer is designed to be repaired by replacing field replaceable units (FRUs). Part numbers are located in chapter 8 and can be ordered from CSSO-A or CSSO-E.

Exchange and recycling program

HP offers remanufactured assemblies for some selected parts.

- **Printer and Parts**—Design for recycling has been incorporated into this printer and its accessories. The number of materials has been kept to a minimum while ensuring proper functionality and high product reliability. Dissimilar materials have been designed to separate easily. Fasteners and other connections are easy to locate, access, and remove with common tools. High-priority parts have been designed to be accessed quickly for efficient disassembly and repair. Plastic parts have been primarily designed in two colors to enhance recycling options. A few small parts are colored specifically to highlight customer access points.

  HP provides a product return system for customers in Germany. Many of the functional parts are recovered, tested, and reused as fully warranted service parts. Used parts are not placed into new product manufacturing. The remainder of the product parts are recycled, if possible. For product return information, call **(49) (070) 3114-1936 or Fax (49) (070) 3114-4195.**
- **Paper**—This printer is suited for the use of recycled papers when the paper meets the guidelines outlined in the *HP LaserJet Printer Family Media Guide*. This printer is suited for the use of recycled paper according to DIN 19 309. The on-line user guide is provided on compact disc, which allows the same high-quality information to be provided without consuming the large quantities of energy and natural resources required to produce traditional paper manuals.

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Ordering documentation and software

The table below shows ordering sources for related documentation and software. Telephone numbers for the various sources are:

- Commercial Support Services Organization-Americas (CSSO-A) (1)(800) 227-8164 (US only)
- Commercial Support Services Organization--Europe (CSSO-E) (49) (070) 3114-2253
- HP Distribution Center (HPD) (1) (661) 257-5565. Fax: (1) (805) 257-6995

Related documentation and software

Description	Part number	CSSO-A	CSSO-E	HPD
HP LaserJet Printer Family Media Guide	5963-7863			X
HP JetDirect Print Server Administrator's Guide	5969-6818	X	X	
Technical reference package	5021-0377	X		
HP Color LaserJet 4500 series Drivers Disk	C4084-60122			
HP Color LaserJet 4500, 4500 N documentation bundle (quick reference guide and getting started guide)	C4084-99021	X		
HP Color LaserJet 4500 DN documentation bundle (quick reference guide and getting started guide)	C4094-99020	X		
HP Color LaserJet 4550/4500 Series Printer Service Manual	C7085-90921	X		
HP Color LaserJet 4550/4500 Series Printer Service and Support CD-ROM	C7085-60102	X	X	
HP Color LaserJet 4550/4500 Series Printer Quick Reference Service Guide	5963-7921	X		

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Support resources—Asia Pacific and Europe

HP Customer Care Centers in Asia Pacific

Country	Customer Care Center	Service Center
Singapore	65-2725300	
Hong Kong	800-96-7729	
Vietnam	84 8 8234530 84 8 8294485	84 4 9431718
Indonesia		62-21-3518788
Philippines	632-829-5387 632-829-5388 632-829-5389	
Thailand		66-2-661 3900
Malaysia		6-03-7953788 Fax: 6-03-7954423
India	91-11-6826035	
China	86-10-5645858	86-10-62351040-6554 86-10-62385047
Taiwan	886-2-2717-0055	
Korea	02-3270-0700 02-3270-0740	
Australia	03-8877-8000	

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A Acronyms and abbreviations

Acronyms and abbreviations

AC	Alternating current
AUTOCONT	Automatic continue
BNC	A 10-Base 2 connector used with coaxial cables
CFG	Configuration on control panel
DC	Direct current
DCPS	Direct current power supply
MS-DOS	Disk operating system
DIMM	Dual inline memory module
DPI	Dots per inch
DTR	Data terminal ready
DTR line	Data terminal ready line
ECU	Engine control unit
EP	Electrophotographic
FRU	Field replacement unit
FTP	File transfer protocol
HP FIRST	Hewlett-Packard fax information retrieval support technology
HP-GL/2	Hewlett-Packard graphics language
HTML	Hypertext markup language
HV	High voltage
HVPS	High-voltage power supply
I/O	Input/output
IR	Infrared
IrDA	Infrared Data Association
IRQ	Interrupt request
ITB	Intermediate transfer belt
JEIDA	A type of memory module
LAN	Local area network
LED	Light-emitting diode
LC pickup roller	Lower-cassette pick-up roller

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Acronyms and abbreviations (continued)

MB	Megabyte
MEM	Memory
MIO	Modular input/output
MP pickup roller	Multipurpose tray pick-up roller
MP Tray	Multipurpose tray
MSDS	Material safety data sheets
NVRAM	Nonvolatile random-access memory
Ohm	A unit of measure of electrical resistance
OHT	Overhead transparency
PCA	Printed-circuit assembly
PCB	Printed-circuit board
PCL	Printer command language
PC pickup roller	Paper-cassette pickup roller
PJL	Printer job language
PS	Photosensor
RAM	Random-access memory
RIP	Raster image process
ROM	Read-only memory
SIMM	Single inline memory module
SL	Solenoid
SPEC	Specification
TCP/IP	Transmission control protocol/Internet protocol
TS	Thermoswitch
UNIX	Network operating system using TCP/IP protocol
URL	Universal resource locator
VDC	Volts direct current
VFD	Vacuum fluorescent display

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Service Websites

HP Customer Care Online

Software drivers, support documentation, and frequently asked questions

http://www.hp.com/go/support

HP Technical Training (North America)

Classes and schedules

http://www.hp.com/go/resellertraining

Parts

Parts information

http://outfield.external.hp.com/spi/welcome.htm

For support resources in Europe and Asia Pacific, see page 204.

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Service telephone numbers

All numbers listed are for North America only.

HP Customer Care Reseller Sales and Service Support Center

Dealer pre/post sales and service support

(800) 544-9976 *U.S. Only* (800) 363-6594 *Canada*

Customer Care Center

User technical-support questions, LaserJet fax

(208) 323-2551

Customer Information Center

Sales dealer locations, literature, and specifications

(800) 752-0900 *U.S. Only*

HP Driver Distribution Center

Printer drivers and software application notes orders

(970) 339-7009 *U.S. Only*

Customer Support Sales Center

Authorized repair locations

(800) 243-9816 *U.S. Only*

Parts Direct Ordering / CHSD-A

Service parts, supplies, and accessories orders

(800) 227-8164 *U.S. Only*

Parts Identification

Service part number identification

(916) 783-0804

HP Customer Care Center

Online technical assistance

(800) 477-5526 *HP Only*

Corvallis Customer Service Center

Express exchange and customer return services

(916) 785-1200

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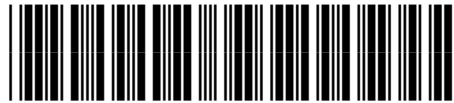

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